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ABSTRACT

The document reproduces the eleven keynote addresses given at a conference on special education. The presentations centered on such topics and issues as accountability, relevance, integration of subsystems, individualized instruction, diagnostic-prescriptive teaching, systems analysis, instructional technology, differentiated staffing, creativity in the classroom, and voucher systems. Three current themes running through each of the presentations were those of accountability, relevance, and integration of the handicapped. (Author/DN)

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NEW ORGANIZATIONAL PATTERNS AND DELIVERY SYSTEMS

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PREFACE

This volume reports the proceedings of a conference on special education held at the University of Oregon from May 6-8, 1970. The conference participants, who represented many different fields, addressed themselves to the theme "New Organizational Patterns and Delivery Systems" in a series of keynote speeches, as well as in group discussions. The papers included in this volume are copyedited versions of these keynote addresses.

The conference was sponsored by the National Consortium of Universities Preparing Administrators of Special Education and by the University of Oregon, Department of Special Education.

A special acknowledgment is extended to Mr. Kenneth Wyatt of the U.S. Office of Education for his participation in the conference. Regrettably, his paper could not be included in this volume.

INTRODUCTION*

Recently, educators and graduate students representing many fields of education met at the University of Oregon to attend the Second Institute of the National Consortium of Universities Preparing Administrators of Special Education. The theme of the conference was "New Organizational Patterns and Delivery Systems," and the various presenters, few of whom were special educators, centered on such topics and issues as accountability, relevance, integration of subsystems, individualized instruction, diagnostic-prescriptive teaching, systems analysis, instructional technology, differentiated staffing, creativity in the classroom, voucher systems, and others. Accountability, relevance, and integration of the handicapped were at least three well-known themes running through the various presentations.

William Deterline framed a vital issue for the Institute in the form of three questions. "At some point," he said, "the critical decision must be made: Is it worth the headaches and problems that accompany a major change? Can we afford not to change? Must we avoid change in order to avoid the risk that the whole structure might collapse?" Inherent in the development and the utilization of new organizational

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*These remarks were prepared by Charles Meisgeier, Coordinator of the Special Education Administration Program at the University of Texas, Austin, Texas, and the following students: Larry Marrs, Robert Moore, and Robert Swanson.

patterns and delivery systems is the need for change in the system. How does a system effect change? How does it respond to its own failure, and how does it accomplish or even establish its own goals? To effect change, some understanding of systems is imperative.

Closed and Adaptive Systems

F. Lee Brissey, a systems analyst, characterized systems as falling along a continuum ranging from closed to adaptive. Generally, systems fall into one of three characteristic types on this continuum: the closed system, the homeostatic system, or the adaptive system.

The closed system tends to be unaware of the consequences of its interaction with its environment. It either refuses to accept, or it greatly distorts, feedback results in random behavior (that is, interactions with the system's environment which demonstrate little, if any, awareness of that environment). Because it refuses to be aware of its environment and cannot plan for the contingencies of reality, the closed system proceeds inevitably toward destruction.

The homeostatic system functions primarily to maintain the status quo. It tends to manage feedback so as to maintain "things as they are" and is characterized by defensive, inflexible, and, not infrequently, hostile behavior. As environmental contingencies change, the homeostatic system expends its resources in attempts to maintain behaviors that served it under the old environmental contingencies. This leaves no resources for growth or adaptation. Thus, as environmental contingencies become more complex and/or different, the homeostatic system tends to regress toward becoming a closed system.

The adaptive system attempts to use feedback positively, utilizing it to map out changes in the environment which, in turn, may require changes in that system's mode of interacting with its environment. In other words, the adaptive system accepts all feedback in order to better understand the nature of its relationship to its environment, and it uses this feedback to make more valid predictions about the consequences of its interactions with its environment. Conscious of all its goals, the adaptive system moves toward their fulfillment. Realizing the value of its resources, and those of its environment, the adaptive system is able to function in harmony with coexisting systems; it can move toward its goals with harmony.

Harmony between an adaptive system and its environment is achieved by finding the proper mix of restraints and freedoms for that particular system. This implies that, for any given set of goals, and operating within any environment, a system may be designed to implement these goals. In short, systems can and do exist in a state of order with the environment.

Brisk discussions throughout the Institute related to opening the system up, to integrating it both internally and externally, to making it more responsive to the needs of its environment, and to ordering it so that it would meet its stated goals. Brissey nicely described an open, adaptive educational system as one whose goals may be stated in terms of delivering those goods and services that facilitate the capacity of the clients themselves to function as adaptive, problem-solving systems.

The Institute pointed up the fact that special education finds itself in a dilemma not unlike that faced by the general field of education. The plight of general education was described by A. William Wayson: "Education is life; school is a moratorium on life." The quality and effectiveness of the total educational system is being deeply challenged in the professional community and by the public at large.

Accountability, Relevance, and Integration

Three common themes ran through the presentations of the Institute's speakers. They were accountability, relevance, and integration. *Accountability* in systems is the responsible and fruitful utilization of system and environmental resources. *Relevance* is the successful mapping of changes in the environment on the system, leading to changes in the system itself needed to meet its goals under the new set of environmental demands and needs. *Integration* is the smooth, accurate, and beneficial flow of information and resources between the subsets of the system and between that system and coexisting systems. The actualization of these three concepts in the field of education has been a much-talked-about, but slow and painful, process.

Institute discussions of accountability were peppered with such statements as, "Much of education could be described as pulpit centered and knowledge dispensing, in which students do not get focused on very often. Very little of the so-called innovation in education has filtered down to where much, if any, difference occurs in students. Apparently, judging from the data that are already available, there

are ways of going about educating students that are better than the ways we have been using."

A radical proposal described by Jack Birch promises to do much to hasten the demise of closed education systems. He reported on the use of voucher systems, which would allow school consumers (children and parents) to choose a school depending on their own criteria of what a school should offer. Performance contracting with private educational organizations, where the contract is considered fulfilled only when the students meet predetermined and specified educational objectives, should make public school educators, including their university suppliers, take heed. In fact, Birch reports that "the move now . . . is toward the purchase of educational diagnosis and instruction. . . we are moving toward the private sector in the purchasing of services."

Adaptive Systems

What forms of adaptive behavior may public schools adopt in order to remain viable? A number of conference papers discussed types of adaptive behavior that may need to become a part of an educational system's standard operating procedure. Significant among these concepts are differentiated staffing, the voucher system mentioned above, performance contracting, precision teaching, instructional technology, theory *Y* or *Z* administration, and a systems analysis approach to the whole educational process. Nearly all these proposals include the clearcut identification of instructional goals for the client and operational goals for the system.

Differentiated staffing was characterized by Robert Gourley as an

attempt to utilize a wider range of resources in the schools. Resources are drawn not only from the school environment itself, but also from the community. Those working in this plan are called on to do whatever they do best; and an attempt is made to pay them according to their demonstrated competency, not on the basis of their position in the bureaucratic hierarchy. This type of behavior is clearly adaptive; it reflects a system's willingness to change internally to meet the demands for increased efficiency, i.e., better teaching. It also indicates that the system is willing to open up, to go outside of its traditional resources (i.e., the immediate school staff and faculty) and work with and accept feedback from its environment (the community). There have been efforts in this direction in the past, but many reflected what Miles called a "bastardized human relations approach." These efforts used community resources in a token manner, primarily for public relations. The Beaverton Plan, as presented to the Institute, utilizes a variety of resources in a variety of ways to meet its goal--educating children.

The *voucher system*, in which the consumer selects the school of his choice, primarily fosters feedback about a system's interaction with its environment. If the system is meeting the environmental demands placed upon it, i.e., providing good, acceptable educational services, it enjoys the continued support of that environment. If it fails to meet the demands, environmental support is withdrawn and the system perishes. The establishment of an effective voucher system, with its built-in strict accountability, forces the educational system to either become more adaptive or go out of business.

Performance contracting is another manifestation of adaptive behavior. To successfully secure and fulfill a performance contract, the system must (1) realistically determine the needs of each of its clients, with particular regard to the environmental demands that will be placed on that client; (2) state clearly and specifically the performances it will deliver to that client, how these performances will be achieved, and how they will be validated; and (3) be cognizant of and able to mobilize the various resources germane to its goals.

Precision teaching is an adaptive system within itself; when fitted into the larger educational system, it becomes an adaptive subsystem. That is, precision teaching requires identification of the demands made upon its clients. It then converts these demands into relevant educational and behavioral objectives. Constant feedback is sought via the clients' performance. The meaningfulness of objectives and the appropriateness of the strategies designed to achieve them is frequently reviewed. A willingness to change methods and strategies to meet changing environmental contingencies is imperative.

Instructional technology uses precision teaching methodology, an adaptive system itself, supplemented by hardware that increases the effectiveness of the instruction. The hardware alone, however, should not be confused with the adaptive behaviors that determine the effective use of that hardware. Successful instructional technology requires the integration of sound instructional methodology, based on a relevant educational rationale and curriculum, with appropriate instructional hardware. Instructional technology exhibits another critical adaptive behavior:

it recognizes the limits of its effectiveness. It realizes that human relations skills are largely out of its purview, and that the responsibility for the development of such skills will remain with the classroom teacher.

On the whole, emerging *administrative patterns* were viewed by Institute participants as attempts by administrators to function as adaptive systems themselves, to foster adaptive behavior in their organizations, and to cultivate it in their clients. One of the characteristics of the adaptive system is its irritability; it is sensitive to changes in its structure and its environment. William Wayson discussed adaptive administrative patterns and their effectiveness in the administration of an open school in urban Syracuse, New York. The school was open to the community, to both parents and siblings of the pupils. Interested members of the community were given free access to the school. Their feedback was utilized. As a result, the youngsters were receiving an education based on the demands of their environment, and they were being prepared to meet the contingencies that future environments will impose on them. Though it makes no claim to perfection, the Syracuse project was noted by Wayson as a system exhibiting many adaptive behaviors.

The use of *systems analysis* in the educational setting reflects adaptive systems behavior on the part of educational administrators. In reality, its impact can be felt in many effective types of adaptive behavior, for goals need to be identified, success measured, and the economic expenditure of both effort and resources studied. For change to be progress rather than random alteration of behavior, procedures such as systems analysis need to be employed.

A Parallel System

Special education was developed to meet the needs of children who were not being served adequately, or at all, by the general education system. It has become a parallel system, designed to meet the needs of some of the population excluded from regular education services. As such, it has been segregated from regular education services; segregated classrooms were established, separate lunch periods were maintained, separate recesses were set up, etc. Setting up parallel systems to meet needs not being met by the established system is a common device of highly bureaucratic structures.

The parallel system--known as special education--has grown substantially since its inception. With its growth has emerged a new professional--the special educator. New professions tend to progress through a predictable developmental sequence, according to Dwight MacDonald. Special education has not strayed from that sequence. It has developed professional organizations, professional and scholarly journals; and, to some degree, it has adopted the cloak of elitism. Special education administration has attempted to establish its own theoretical body of knowledge--an effort Willenberg has challenged as self-serving. In short, the professionals in the field of special education have supported the notion and practice of a parallel system.

Recent articles in *Exceptional Children* declare that if exceptional children are really to be served, the system now responsible for serving them must be changed; it must become an adaptive system. Again, Deterline's question presents itself to special educators as well as to

general educators: "Must we avoid change to avoid the risk that the whole structure might collapse?"

The Consortium as an Adaptive System

The National Consortium of Universities Preparing Administrators of Special Education itself may be viewed as an adaptive system. This is evidenced by the occupational range of those who were asked to speak at the conference. While university professors were in abundance, there was a school principal who stated that a man who has grasped the concepts of administration can administer anything. A school superintendent stressed the use of outside resources in public school classrooms and planned his differential staffing patterns around the concept that "staff utilization should be based upon teacher competence and responsibility to help students achieve behavioral objectives." University students, while not on the official speakers list, made themselves heard and felt throughout the conference.

Consortium Report

In the preface to the report of the 1969 National Conference of Colleges Preparing Administrators of Special Education, Lenard Lucito viewed that Conference's efforts as primarily positive, noting what he considered to be three significant milestones: (1) the affiliation of the consortium with the University Council for Educational Administration (UCEA); (2) the continued shared responsibility of both doctoral students and university faculty members in the development of training programs, not only at the various colleges and universities, but also

in the consortium activities themselves; and (3) the continued sharing of ideas among the various training programs involved.

Events at the Eugene conference indicate that special education administrators are not willing to avoid change to avoid the risk that the whole structure as a parallel system might collapse. Three acts confirm that unwillingness. First, the affiliation of the consortium with UCEA. Second, the expanded exchange of information between general and special educators. Third, the dialogue between special and regular educators centered around the integration of the handicapped into the regular or main system.

The first point cannot be passed over lightly. If, as is strongly indicated, administrative leadership is a critical factor in change, then the most appropriate and potent place to begin that process of change is at the top leadership level. This applies particularly to the future leaders in the field of education. The vehicle most able to influence this change is UCEA, for it has impact on all school administrators, not just special education administrators. The affiliation with UCEA means that special education is reaching out, risking its present structure in order to become a more viable, adaptive component of the educational system.

Conclusion

No summary of the consortium activities for the past year would be complete without recognizing and commending Marty Martinson for the outstanding job he and his students and the Consortium Executive Committee have done to make this conference a success. Their efforts constitute an

immense contribution to the growth and development of the Consortium.

Are the goals of special education any different from the goals of regular education? Special educators are no longer talking to themselves. They are gaining the ear and tapping the resources of other educators, and they are bringing their own resources into the whole of general education. The parallel system of special education has, despite its many shortcomings, produced information and methodologies that should prove valuable to the whole field of education as well as providing educational strategies for meeting the needs of the exceptional child. Much of the work in individually prescribed instruction (IPI), precision teaching, and educational diagnosis originates in special education's parallel system. The transfer of the responsibility for learning from the student to the educational system has strong support among special educators. The special educator does not come empty handed into the larger system of general education.

The demands on both the general field of education and on special education have forced both of those systems to begin to open up, not only to each other, but also to the demands and needs of an ever more complex, rapidly changing environment. How can we escape the necessity and the inevitability of becoming more adaptive?

DELIVERY SYSTEMS FOR INSTRUCTIONAL IMPROVEMENT

Ted Ward*

Although my involvement with special education has been fairly recent and my experience with administration rather slight, I believe I share some of the interests and concerns of this group, which I trust we will be able to explore together. This will perhaps set the scene for more careful and deliberate studies as the conference proceeds.

Several years ago, when Lou Alonso and I wrote the proposal for the Instructional Materials Center (IMC) that we developed at Michigan State University (MSU), it was our intention--reflected in the proposal--to find ways to bring together the forces in the behavioral sciences to provide more promising solutions to the problems of delivering instructional services. Specifically, we wanted to find a way to combine some of the interests and efforts in the College of Education that were directed toward instructional systems design with the forces that had been long-standing in special education in order to really accomplish something in the improvement of education for handicapped children. The IMC that the Bureau for Education of the Handicapped established at MSU has been operating since its establishment among that first group of centers. Our first job was to obtain some insight

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* Ted Ward is Director of the Institute for Research in Human Learning at Michigan State University.

and understanding about the nature of instructional materials centers and the concept of delivery systems in the educational world at that time.

Looking over the field, we made some interesting discoveries. I would like to share some of our conclusions with you. We discovered that the delivery of instructional resources was largely at the stage of development represented in the pipeline model shown in Fig. 1: great ideas and innovations were somehow funneled into a pipeline, which served as the delivery system to the classroom. Looking more closely, we discovered some things that were not very encouraging. For

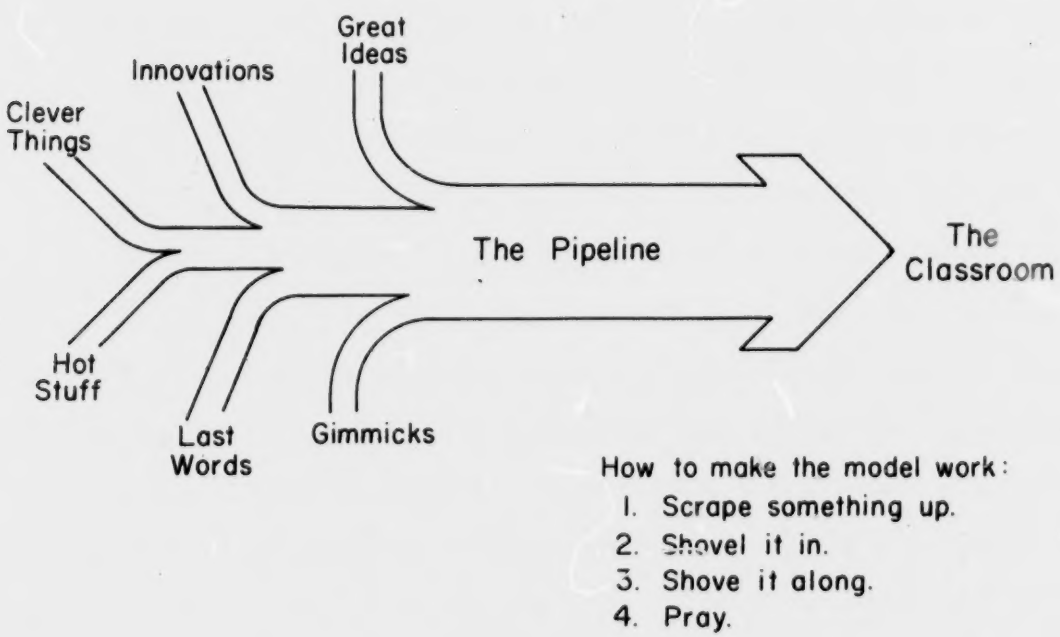

Fig. 1--Pipeline model of the delivery of instructional resources

instance, some of the things being shoveled into the system were gimmicks and unproven bright ideas. After a more careful analysis, we discovered imbedded in this model a concept of how to make it work: First you scrape up something; then you shovel it in and shove it along; and, finally, you pray. This seemed to be rather typical of what was being done with instructional delivery systems.

There seemed not to be much thought, at least within the areas we surveyed, about the definition of the roles and functions within instructional resource delivery systems. Perhaps this was too strong a condemnation; but of course we are willing to share in the condemnation, since some of us have not moved the whole process along all that much since!

As we start off this conference, in which we are asked to look at new concepts of the organization and delivery of instructional services for handicapped children, it might be useful to look at some of the things a systems analysis view of education allows us to do, and at some of the consequences of taking a systems analysis view. Most of you are well ahead of me as far as knowing what systems design means for educational administration, so I will only attempt to add some observations and propositions about systems design as it relates to instructional services.

Instructional systems concepts have several distinct consequences for instructional services, some of which have great value. Seven are described below, in order of increasing significance (the first two are the least consequential and may, in fact, border on the facetious!):

1. One consequence of systems analysis concepts is that they provide one more way to talk about things we do not really understand. Since systems jargon is much easier to learn than computer jargon, it turns out to be a handy way for many people to get instant erudition. There are only about eight words you need to talk "systems talk"; you need about fourteen to talk "computer talk."

In a sense, then, the problems that have been addressed to instructional systems design have been ones that we really do not know too much about. This has served one valuable function. If you really feel you do not understand enough about the variables in a particular problem, you say, "Let's do a systems analysis." It may very well be that this makes us a little more honest about what we can and cannot understand. I think, for example, of the current U.S. Office of Education project to develop models of teacher education for elementary teachers. You are likely familiar with these ten models, one of which was built at MSU. Every one of these ten projects uses, in one way or another, a systems design concept--a reflection of this first consequence. Systems analysis allows us the use of fresh terminology to deal with problems that we know we do not understand; whether or not this produces more understanding is debatable.

2. The second thing that is produced by thinking in terms of systems analysis in education is a deep anxiety over the dehumanization of education. In explaining systems concepts in reference

to education, I try to illustrate the difference it makes to think of education in systems analysis terms (Fig. 2). In

WHAT DIFFERENCE DOES IT MAKE. . .

1. to think of students as *input?*
2. to plan to get and use *feedback?*
3. to use a design concept that does not specifically mention *teacher?*
4. to think of *learning* as "changed behavior"?

Fig. 2--A systems view of education

educational systems, for example, the *input* is used to represent that which comes into the system to be processed--and goes out as *output* of the system. It makes a difference to think of students as *input*. Although this sounds almost inhuman, it forces us to face up to the attunement (or lack of attunement) between the capabilities of the learner and the demands of the system.

It does make a difference to plan to obtain and to use *feedback*. When we use words like *feedback*, it may sound as if the processes are so mechanical that there may be no room for people and human feelings. Of course, one of the most threatening things about the use of systems terminology in education is the tendency of systems terminology not to use words like *teacher*. In systems terms, teachers are *human components in the processing system*. And teachers can get shaken up over that! You use behavioral criteria to define and defend learning, and you end up

with definitions like "learning is changed behavior." All of these terms and concepts have a certain dehumanizing tendency, and we should be careful not to defend that tendency. It hardly seems fair, however, for systems engineers to take all the blame for dehumanizing education in our time; there are other forces that have been at it so much longer!

3. The third consequence is the first of those that we might call distinct advantages: emphasis on specification of objectives. Whether we are talking about what happened because of teaching machines, what happened because of programed instruction, or any of the other innovative trends, the emphasis on *objectives* has a certain value in educational planning. An emphasis on instructional objectives tends to embarrass the system into really looking at itself in terms of its objectives. If an institution has been allowed to develop without continuous and particular reexamination of its objectives, a review of these objectives will tend to nudge the institution in rather healthy ways. I mean *embarrass* and *nudge* in the most constructive sense: to make the institution aware of the extent to which it has let goals, purposes, and objectives become subordinate to maintenance of the status quo and institutional "stability." An emphasis on objectives also produces clarity--at least verbal clarity. It allows a reexamination of values, and it focuses on products. This seems to be very appropriate in a day when we have become very process oriented, almost to the exclusion of concern about the products of the processes.

4. Another consequence of systems analysis thinking in education is an emphasis on feedback, which is timely now, when educational institutions and their decisionmakers are having to learn to listen. I am impressed that our values switch so rapidly that we get into a kind of projective confusion that says, "Our kids are more militant than your kids; ya, ya, ya!" The capacity of an institution and its leaders to listen to feedback is very healthy. Those of us who deal with people must become deeply aware of the value of learning to listen. Learning to listen and to pay attention to evaluative data for other than the obvious and simple uses (making judgments--that this one has achieved and that one has not) could make a great difference in the way we approach instructional management. If we saw the *system* as being on trial, not just the kids, then I think something very significant might happen. The more we focus on feedback, the more we become aware of the role and function of feedback in the management and refinement of the system. And we become more aware that the value of evaluative data is not simply in telling whether or not a child has achieved, but in telling whether or not the system has achieved for that child.

5. The fifth consequence is less isolation for education and educators. Probably because we are ostracized by other of our academic colleagues, and possibly because of our own rather independent nature, we tend to accept a separate status from the rest of the academic community (for those in the public schools, it is with

reference to the rest of the intellectual community). One of the consequences of systems thinking is that we can identify our problems and mechanisms with those of many other fields. I think the clearest example is in the field of communications. For many years, people in communications have been talking about *senders*, *receivers*, *messages*, and *change*, as well as *feedback*, *signals*, and *noise*. They refer to *experiences in perception*, which produce *meaning* and then produce *feedback messages*. These are received by the *original sender*, in whom they produce *experiences* and *perceptions*, which result in *message adjustment* and *message retransmission*.

A communications model, which is invariably a systems model, becomes a point of common reference with the field of communications. Information systems models, of the sort shown in Fig. 3,

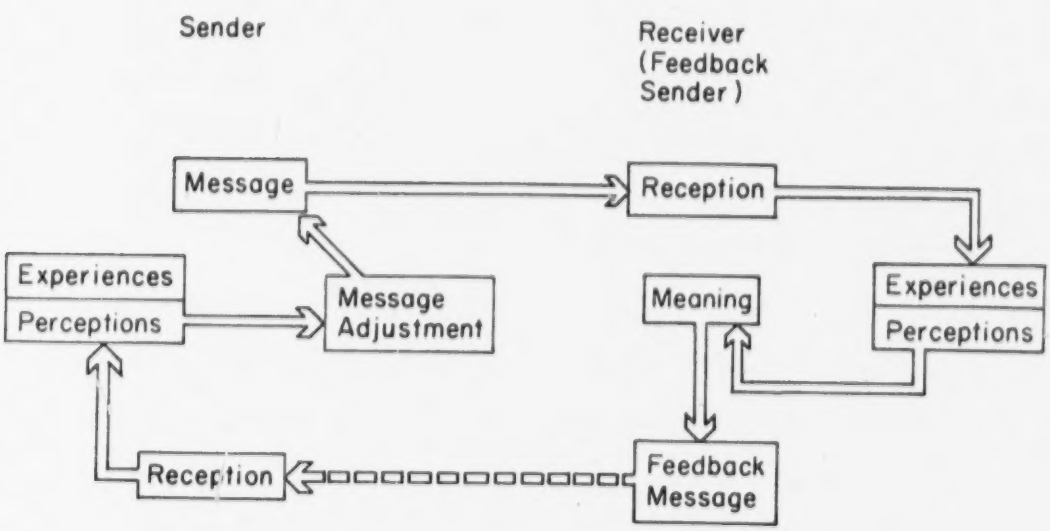

Fig. 3--Communications model

describe basic functions in instruction. An educator can fill in the equivalent terms from education; this will describe the particular part of the instructional system that is concerned with the communication of information in the classroom to the learner. The dotted line at the bottom of the figure indicates that feedback messages may or may not be received, a challenge both to educators and to communications engineers.

One of the consequences, then, of systems analysis thought has been to help us draw appropriately from other disciplines, particularly the behavioral sciences. Models and concepts, particularly those of information flow and information processing, allow us both to think in another, perhaps *better*, way about our problems and to identify with colleagues in other academic pursuits.

6. The sixth consequence of systems analysis thought is that it provides a logical tool for taking account of the many elements that go together and affect each other in terms of educational goals and thus constitute an educational enterprise. Educational administrators for years have been aware of what today might be called *interoomponent relationships*. And, although we perhaps get from systems analysis only a new vocabulary for old ideas, it probably goes further: it makes not just terminological but functional differences to have systematic procedures by which to identify and relate the components of any communication or education enterprise and the processes they produce. It keeps us from having quite so many blind spots.

7. The seventh consequence of applying systems analysis thought to education is that it provides a tool for breaking out of traditional models and preconceptions. (This is not to say that systems analysis is the only such tool--there are even various drugs that allow one to do this.) The heuristic aspects of systems analysis and design can allow one to escape, at least experimentally, the rigid boundaries of experience that have produced preconceptions about the nature of things. Such heuristic models permit breaking with that most important of all constraints, the notion that we have to be "realistic." Any systems design, in the final analysis, attempts to be realistic--but *after* thinking through a problem, rather than applying the constraints of supposed reality before deeply examining the contemporary situation.

We have reviewed here the consequences of systems thought in education. I have emphasized consequences rather than processes and procedures for two reasons: First, I can list the consequences from one man's point of view without so much danger of retreading old ground. Second, this approach may encourage those who have not yet done so to investigate some of the excellent literature on systems analysis concepts. For example, a booklet has recently been released by the Government Printing Office (at the enticing cost of forty-five cents), written by Walter Le Baron. Its title is long (as you might expect of this sort of publication): *Systems Analysis and Learning Systems in the Development of Elementary Teacher Education Models*. Le Baron examined and evaluated the ten projects in teacher education (mentioned earlier) for the U.S. Office of Education. In order to ensure

understanding of his report, he prepared a primer, which is a much-needed review, illustrated by the ten projects, of systems analysis thought as it relates to educational planning and administration. Administrators in general and special education administrators in particular are encouraged to read this brief book, both to get a view of systems analysis as it relates to education and to learn what new approaches to training elementary teachers the U.S. Office of Education has initiated. (The resulting projects may have considerable impact on all future teacher education.)

Delivery systems for instructional services are a particular concern of those of us who have been developing and operating special education IMCs and Regional Media Centers. There are some eighteen units in this network, now called the Special Education Instructional Materials Network, coordinated by a Council for Exceptional Children branch under contract to the Department of Education. We have each focused on delivery systems, and we have been encouraged by federal support to engage in a certain amount of evaluation and even more trial and error. A generalized view of the delivery system and its major subsystems in special education instructional services is shown in Fig. 4. This figure also illustrates some of the points made in the first section of this paper.

We can first observe that a delivery system is not merely a pipeline. Nor is it simply mechanical. It is not something that is created, set into motion, and expected to continue to exist. A delivery system *is* a continuous interaction among six sets of people:

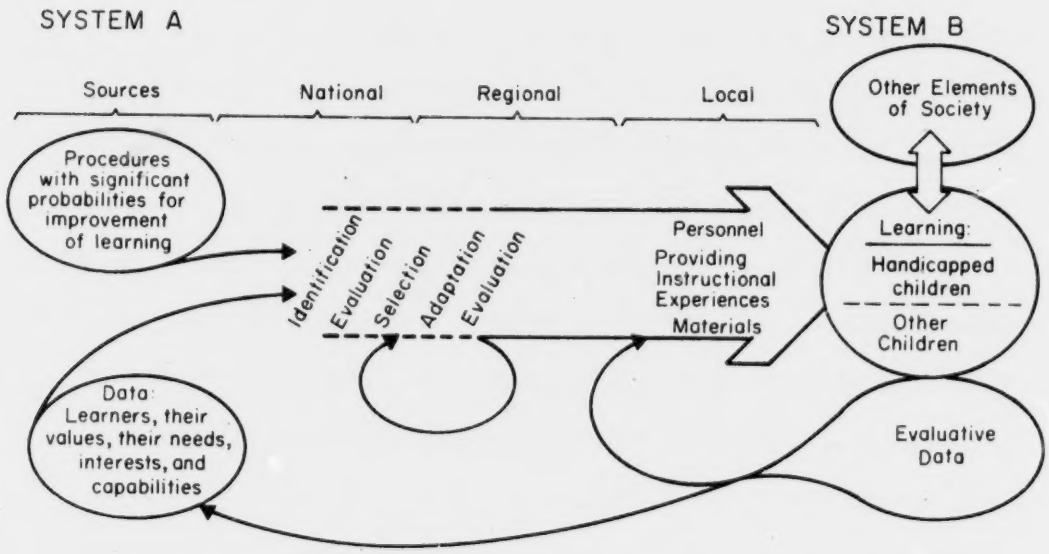

Fig. 4--The delivery system and its major subsystems

innovators, evaluators, communicators, decisionmakers, retrainers, and implementors. A systems analysis view cuts through the stereotyped roles and functions (such as those of *teacher* and *principal*) to account for functions that are fundamental to the system. One principal might function as an evaluator, communicator, and decisionmaker, while another might function as a communicator and retrainer. Many teachers function as implementors. Breaking away from the status-role labels, in favor of more functional labels, we arrive at the following model: a delivery system is an interaction among six sets of people (above), or six functions filled by various people; a delivery system is also an orderly set of procedures to identify, test, inform about, decide on, adapt, adopt, or reject new or altered educational procedures.

A delivery system for special education must arise from a focus on the components and the support mechanisms required by instructional

procedures. A typical delivery system must relate multiple sources to multiple targets. Especially for instructional resources in special education, use of a single-source model is a strategic error. For example, a regional IMC cannot be seen as an adequate single source. IMCs serve as a collective mechanism linking multiple sources and multiple targets. An IMC selects from the sources--each one individually--and delivers to the targets through appropriately functioning individuals. Sources may be particular classrooms, while other classrooms may be targets. Sources may also be Research and Demonstration (R&D) labs, which may be targets in other cases. Classical, fixed concepts like *classrooms*, *teachers*, and *administrators* are redefined in terms of the goals and functions of a delivery system.

Figure 4 is a small-scale view of a complex delivery system in contrast with the pipeline model. In this model, something coming from system A (indicated by the delivery bracket) is put in the form of information and is delivered to system B through a variety of buffers, some of which tend to reject and resist. From these buffers, and from system B itself, feedback is derived, which makes a difference in the kind and flow of information. (A word is needed here about the distinction between evaluative data and feedback data--a matter less of content than of *use*. Evaluative data may or may not be used as *feedback* data. The issue is whether or not the data are used to change the system.)

Ideas have to originate somewhere. Originating procedures or materials can be thought of as a function of system A. Then comes the

matter of *selecting* what is to be disseminated, which can be done wisely or unwisely. An orderly selection process is needed for an effective delivery system. Next, as Fig. 4 illustrates, the flow of information can be intensified and focused as to meaning, aim, direction, and scope. However, information alone may or may not produce adoption of ideas. Richard Carlson's research has helped us recognize that it is not simply the availability of information that produces adoption and change; it is a much more complicated process. Information itself is only one part--and sometimes a very small part--of the whole process of dissemination, adoption, and diffusion of ideas.

Effective communication in a delivery system depends on feedback. (This is a theorem of communications, rather than an observation.) In system B, several buffer forces keep information from flowing readily into B (i.e., toward adoption). The system's stability depends to some extent on maintenance of the status quo. People who deliberately maintain the status quo function as a buffer force, although they may be sincerely concerned. For example, some faculty members strongly resist accepting procedures that others of the same faculty advocate.

A second protector of the status quo is reactionary behavior. Most institutions contain certain people who are intensely wedded to the status quo and who reject anything that might produce change. A third protector is simple complacency--not really an active protection or defense of the status quo, but just a "who cares?" attitude.

Beyond the issues of dissemination procedures there are questions of values. In our work at the Regional IMC, we have been trying to

raise value questions over the whole area of delivery systems. It is not professionally responsible to operate without concern for integrity. Honest dissemination cannot be based on forces of influence and manipulation that bypass the responsible decisionmaker's role in system B. Dissemination is making a decisionmaker in B aware of and critical of the kinds of changes implied by particular information, so that he treats these data among his sets of available alternatives. As a disseminator, you have done all that you should when you provide for the decisionmaker an understandable experience so that he can include among his considerations the new component or procedure that you are attempting to disseminate.

Studying instructional resource delivery systems raises such questions as, In system A, where are the major sources of ideas, procedures, and materials? Some of these are classrooms and teachers; where are they? Some of these are R&D centers; where are they: Some of these are developmental projects; where are they? Some of these are commercial sources; where are they? These questions might seem easy, but it is surprising how hard it is to get exhaustive answers in this day of diverse efforts and scattered activities. Particularly in special education, knowing all that is going on is hard enough, to say nothing about the question of what is worth knowing.

Questions related to dissemination are also of the How? sort. Listening, testing, and filtering input from the elements of system A, as in Fig. 4, are basic to the linkage functions. Because neither system A nor system B typically can do this testing and filtering, IMCs

or other units in the delivery system must test instructional materials for their effectiveness. These evaluative agencies will necessarily employ some highly skilled people, not just custodians for films and books.

There are also important questions about how to carry the filtered flow to the various elements of system B, as well as the problem of converting abstract ideas into practical terms within B. Many times what come out of system A are little more than theoretical specifications; since system B may have no means of translating the specifications into applications, some other unit in the delivery system must do the translation. And when we look at system B (the target system), we are primarily concerned with reaching the decisionmakers. We must know their information assimilation habits; this is very important. A new problem of today is the avalanche of information, publications, and media. We have to ask, Who are the people in system B? What are their input habits; what inputs of information are they already attuned to? What are their styles of decisionmaking? And then, concerning implementors, What are their reward systems?

The matter of reward systems must not be overlooked. Many times we operate on the naive assumption that if something is a better way, it sells itself--because after all, everyone is interested in a better way. However, not all teachers are interested in a better mousetrap. In fact, it is not even safe to assume that all teachers are interested in better instruction! Teachers and administrators operate within personal and corporate reward systems. What are they? What "turns

them on?" To what do they relate? Reading between the lines in the literature on diffusion and dissemination, one way to get things changed is to buy change. But the payoff must be in the "right on" age!

What training is needed by implementors? It does no good to deliver materials and procedures to system B if its personnel are not trained to ensure implementation. The What? questions about system B, the sort systems engineers refer to as problems of environment, also must be answered: What are the system's characteristics? What are the overall constraints within which the particular procedure or material will have to function?

To review, what are the forces or procedures that show promise for the improvement of learning? And what are the data that we have to deal with?--data about learners, their values, their needs, their capabilities. In comparing these data, there emerges a logic for identifying practices, procedures, and instructional materials that would make a valuable difference in education. An effective link between source and target depends on orderly, identifiable functions to identify, test, inform, decide, adapt, and adopt. The evaluative feedback loop and the recycling of the functions assures vitality and relevancy. The payoff is at the local level, where the primary responsibility for personnel and instructional materials rests. Here the delivery system culminates in the instructional experience itself, resulting in learning for handicapped children in association with other children--and in relationship to the rest of society.

THE EDUCATIONAL ORGANIZATION AS AN ADAPTIVE SYSTEM

F. Lee Brissey*

The theme of this conference, "New Organizational Patterns and Delivery Systems," at once raises a host of interesting and important questions for all of us. A good conference theme should do exactly that. And speaking for myself, this conference theme is an outstanding success, for certainly it has generated in me a variety of challenging and fascinating questions. Among these, I would like to share four or five very briefly with you.

To what does the phrase *organizational patterns* refer? Why are we concerned with *new* organizational patterns? A related question is, What are *delivery systems* (whether we regard them as old or new)? What is to be delivered? To whom? When? And, perhaps most importantly, Why? What relationship, if any, holds between organizational patterns on the one hand and delivery systems on the other?

For me there is an overriding question, one that catches up the preceding four. It has to do with what I consider an urgent question for all of us in our time: What is the relationship of the individual human being to organizational patterns and delivery systems--those who devise the materials and those who devise the delivery activities? I include certainly those who receive these activities, whosoever they

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may be. I am particularly interested in the human problem. The following remarks reflect my efforts to "muddle about" in these questions and to do the muddling from the point of view of a general systems conceptualist or general systems theorist (at least as far as my understanding of what these chaps are up to allows me to go).

First, then, I would like to ask a very primitive question: What might we mean by an organizational pattern? At the most fundamental level, the term *organizational* seems to refer to a specified collection (or set) of interrelated things: attributes, concepts, signs, and people. Human beings, for example, and their diverse behavioral properties are a particularly appropriate set for the organizational question. The term *interrelationships* means, at least, a *coordering* of properties. And when things are coordered, we may then speak about a set of things as structured--structured somehow in space and in time.

Structure, in turn, may be treated as variable; and it may be examined in at least two ways. There is a question of the *form* of structure and there is a question of the *amount* of structure. As we begin to examine the question of structure in some depth, we come to realize that structure is not a matter of certainty, nor a question of rigidity; structure varies in degree, some structures showing, perhaps, randomness or total *dis*order, others showing high order and, therefore, from almost every point of view, high predictability.

Another way of viewing structure is to say that questions concerning the amount of structure in a given set of objects or people or behaviors entail the concepts of *variety* (or variability) and *constraint*.

We cannot meaningfully use the term *structure* unless there is first variety or variability.

In more informational terms, following the lead of Wendell Garner, structure can be spoken of as *related uncertainty*, or in systems terms, *constrained variety*. Both are important--constraint and variety, certainty and uncertainty. Thus defined, structure may be treated as an internal property of a given set; and when the evidence warrants, we can treat the sets as being organized.

In a similar sense, the term structure or organization may be applied to other sets and to the relationship between two or more structured sets. From these rather ambiguous, or at least abstract, concepts we may begin to carve the everyday notions of organization and environment. We begin to sense the force of Professor Ross Ashby's Law of Requisite Variety. By this view, the viability of any organization depends on, among other things, the ability of the organization to sustain at least as much variety as that which characterizes the environment. Or some of you may be acquainted with Professor Walter Buckley's work in the same area; he has stated the matter, "Only variety can regulate variety."

More succinctly, again quoting Buckley, "Rigidification of any given institutional structure must eventually lead to disruption or dissolution of the (organization) by way of the internal upheaval or ineffectiveness against external challenge."

For a preliminary view of organization as constrained variety, I would like to turn to the matter of organizational design, and to ask

some questions through the vehicle of a metaphor--a rather extended metaphor, which, like all metaphors, calls attention to a purely hypothetical situation. The question here is largely, How do we invent new patterns of organization, i.e., internal arrangements of constrained variety?

Let us imagine an organizational pattern generator, which simply generates a vast array of pattern variations in terms of both the amount and the form of structure; i.e., variety with internal constraint. Further imagine that a very large number of these organizational patterns are contained in a giant filing cabinet, and that the filing cabinet is itself ordered or organized with respect to sets of possible relationships between each of these internal organizational patterns and some for the generalized environment. Organized this way, our giant filing cabinet of organizational patterns might have three fundamental subdivisions.

Again following Buckley, we might call the first *equilibrium* patterns. All patterns in this set, filed under E, would be characterized as relatively closed to environmental change. They would have a reaction potential, but it would be a convulsive kind of reaction to disturbances emanating from the environment; its most obvious property is that it would tend to decay over time. Equilibrium orders tend to move towards states of total randomness or disorganization. This is somewhat reminiscent of the over-simple stimulus-response models of the human being.

The next set would contain *homeostatic* patterns. The patterns in

this new section of our hypothetical filing cabinet would be considerably more open than our equilibrium pattern. They would be characterized by both energy and information exchange with the patterns constituting the environment. Its faculties would tend to preserve the given organizational structure, since homeostatic patterns function very much like a thermostatic heating system, working largely to preserve certain organizational variables within tolerable limits. It would be a self-corrective set of patterns, but its reactions would be compensatory, or essentially defensive.

The third set we could call *adaptive* patterns. The patterns in this division of the filing cabinet would be characterized by still more openness of exchange with their environment. The system would preserve certain properties of both equilibrium and the homeostatic system, but it would include a new element, namely, the capacity to change or elaborate its structure as a condition of its own survival or viability. As Buckley has put it, an adaptive system must manifest some degree of plasticity and irritability, some source or mechanism for variety, to act as a pool of adaptive variability. Further, it must have a set of selective criteria or mechanisms against which the "variety pool" may be sifted into those variations in the organization or system that closely map the environment and those that do not. Finally, it must have "an arrangement for preserving and/or propagating 'successful' environmental mappings." These four characteristics, at least, suggest the the basic requirements for any adaptive system, for any system that sets about to solve one or more problems.

Problems, in a very loose sense, can be defined in terms of discrepancies between *what is* and *what is preferred*, or between *what is* and *what is required*. We have problems when we are alive, because life itself is a continual, on-going expenditure of energy in reducing an evolving set of discrepancies between what is, or what we think to be, the state of the world, and between what is, or what we think to be, the state of our own preferences, individually and organizationally.

Thus, we may think of E patterns (equilibrium patterns), H patterns (homeostatic patterns), and A patterns (adaptive patterns) as problem-solving patterns. To continue the metaphor, let us now imagine that our task is one of selecting an organizational pattern from this filing cabinet, with the full intent of implementing the pattern in an organizational plan. Knowing how the filing cabinet is organized, our first selection problem, then, is to decide whether we are going to search in section E, H, or A. On the assumption that we are concerned with the design of an educational or special educational organization, we would not be inclined to search very long under E. We know that equilibrium patterns tend to move over time to a state of disorganization, toward a state of randomness, and therefore to nonsurvival, nonadaptation. And, certainly, we are concerned that our educational organization, if it is worthwhile, should not perish; the demise of our organization is not reckoned among our goals. If we intend to preserve the organizational patterns we select, and if we further assume that the environment in which these patterns are imbedded is relatively stable, we may choose to search section H of the filing cabinet--the homeostatic section.

The assumptions underlying this selection are troublesome. Preserving an organizational pattern for the sake of preserving that pattern alone would seem not to be our goal. Moreover, the assumption that the environment of the organization is stable and unchanging, is clearly not one that we can entertain any longer in the face of evidence.

Perhaps our best bet, then, is to search in section A, the adaptive patterns. This selection would be guided by our knowledge that the environment of the educational organization is a rapidly changing, evolving affair. Mapping any evolutionary change in the environment is essential to the viability of the organization and therefore to the achievement of organizational goals. The extent to which these goals are judged important or worthwhile is the extent to which the survival of the organization is judged worthwhile.

I would like to note in passing what for me is a very important consideration: that the goals of the educational organization may be meaningfully stated in terms of delivering those goods and services that facilitate the capacity of the clients themselves to function as adaptive, problem-solving systems. This suggests that a "systems orientation" has as much to say about the client as it does about the organization or delivery system; and this same concept or view of man can be applied with equal meaning to either party.

Thus, we begin to see our problem as one of concerning ourselves with interrelationships--the forms of "coupling" between two or more adaptive systems, each concerned with its own well-being, its own survival. And we begin to ask, What does facilitate the client's capacity

to adapt? (Which may or may not be the same as asking what *we* think he should know, know how to do, or value). So, how worthwhile the educational enterprise is depends exactly, in my view, on our judgment of how worthwhile the survival of the client is. Although the foregoing conditions are important, when the organizational elements of concern are human beings, new problems emerge. Thus, finally, through the systems orientation, we rediscover the classic dilemma of human existence, which, if we wanted to name, we could well call *constrained variety*, the most distinctive of human dilemmas. To expand the metaphor by way of explaining the dilemma, suppose we were to implement a new pattern of organization in which intelligent men and women functioned as the organizational elements. It seems apparent that the organizational constraints of equilibrium are decidedly incompatible with the bio-psychological capabilities of human beings. We can expect, at least, very low levels of commitment, and perhaps very high levels of energy expended, in the effort to break out of or to markedly modify the organizational pattern.

Consider next the possibility of implementing a pattern of type H. Now we detect a somewhat better match, it seems, between the organizational characteristics and the known characteristics of the human being. The match is still far from good, however. Patterns of type H deny the exercise of individual or subgroup creative action. It asks each member to set aside and not use his capacity for inquiry, setting his own goals, making decisions, and taking action, alone or in concert with others, which would be consistent with his own adaptive abilities. It

appears that efforts to implement patterns of type A would be far more likely to approximate the characteristics of its human component in the characteristics of the organizational pattern itself.

However well we advance the plausability of the foregoing contentions--i.e., that an organizational pattern of type A is the most compatible with the adaptive abilities of human beings--there are a number of formidable barriers to be overcome in designing and implementing such a pattern. For many, for example (which Ted Ward pointed out rather well), the language of systems analysis is unduly mechanistic, and therefore an affront to the essential dignity, if not the soul, of man. Moreover, the systems analysis concept sometimes seems to be an assault on the autonomy of the human being: man's freedom is at stake. Here we begin to sense the dilemma. As we have seen, to organize is to constrain, even when we are concerned with the adaptive form of organization. Indeed, survival itself, even at the biological level, predisposes man to an emergent structure in which, as again Wendell Garner has suggested, he, individually or collectively, engages in a search for the structure that characterizes his world and for the means to relate his own behavior to that structure.

The phrase that best describes this effort is *seeking constraint*. This point has been clearly and simply made by J. Bronowski:

> The problem of values arises only when men try to fit together their needs to be social animals with their needs to be free men. There is no problem and there are no values until man wants to do both. The man who wants only freedom, at any cost, will prefer the jungle of man at war with man, and if the tyrant wants only social order, he will create a totalitarian state.

The idea is not new. Sigmund Freud expressed it in terms of the id, the ego, and the superego, and thus pictured the complexity of the individual man in relation to the social order. Again, in passing, it may be noted that the representations of man and order advanced by systems theorists must be evaluated, like any others, in terms of their correspondence to the observable world. Let it also be noted that, if the correspondence is not found wanting, then the dilemma of freedom vs. constraint can be judged as the act of a creator who saw fit to design men and organizations as adaptive systems. Thus, the systems theorist stands as the faithful recorder for the designer of this state of affairs.

A few words in conclusion. The filing cabinet of organizational patterns, referred to in our metaphor, does not exist. If it did, we could select predesigned organizational patterns and proceed with implementing them and testing them for their adaptive adequacy. The alternative, of course, is to *design* such organizational patterns for ourselves. And this, it would seem to me, is a way of categorizing the most critical task of the organizational theorist and his administrative colleagues. First, we clarify our knowledge of the nature of adaptive systems, whether physical, biological, or social, and thus discover how best to facilitate coactive participation in the design and implementation of such a system. When we have achieved a measure of success in meeting these objectives, there may be some hope that the dilemma of man, although not resolved, will have evolved to a stable, at least sufferable, level. This, I take it, is a necessary

condition for the delivery of whatever product may facilitate the adaptation of others.

Finally, knowing what facilitates the adaptation of others is *logically prior* to designing a system for its delivery. For a man dying of thirst in the desert, an effort to deliver water in a sieve will not be counted successful, however honorable the intention.

EMERGING CONCEPTS OF ADMINISTRATION

William Wayson*

Let me start with a few definitions. First, I want to speak this morning about *educational* administration, although I do not believe in such a thing. I think that anyone who has grasped the concept of administering can administer anything. He will fail in some situations, but he will succeed in many others. Since you are here as educators and as educational administrators, my comments will focus on the techniques of education and the problems of the educational enterprise.

The second definition I wish to put forth separates education from schooling. Education is life; schooling is a moratorium on life. Education is so rare that I doubt that there are more than two or three people in this room who have had the privilege of it. *Schooling* is what we have all suffered from; school is what our society has suffered from. Schooling is why we are on the verge of a revolution in this country today, with no one in responsible institutional positions who can be effective in stopping it.

Next, we should define the system or the establishment. The system I speak of is made up of all the components that contribute to

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schooling children in America today. These include the kindergarten through the doctoral level, the U.S. Office of Education, state education departments, and textbook and materials publishers; they comprise the system that is failing to educate every child in America today. Although I draw my material from work in urban education, what we need to do in urban education is precisely what needs to be done for every student of every age in America today. You cannot be heard if you talk about *schools* failing (especially if you are talking to school people), but you are heard if you talk about *urban* education failing, because you can see failure happening there. It is not as easy to see it happening where you have your children. The education system is probably one of our best examples of Merton's dysfunctions of bureaucracy. If you want to know how to improve the system of education, I think you must start by reading Merton's account of what bureaucracies tend to do, and then do whatever needs to be done to avert that tendency where you are. No one will improve education without doing that.

Now, let us define administration. Administration is the process of mobilizing all tangible and intangible resources necessary for continuing production on the part of a social institution. I will say nothing new this morning; there are no new concepts of administration. Probably Aristotle and Plato knew them well. All we have ever needed to know about educating children had appeared in the literature by 1910. If you go to the library and look in the 1910 journals, your first remark will be, "Why don't they just recopy the issues and put a new date on them?" Similarly, the solutions of 1910 are just what we need to do

in many ways, but it is time that we stop talking about or advocating them and do something. When I spoke to the Headmasters Association in an Eastern state, one of the men got up and said, "I have been sitting for thirty years through these masochistic sessions, and it is time we patted ourselves on the back for the great good we're doing. And what do you think of that, Mr. Speaker?" I replied, "It's time you stopped sitting and started listening." So, we are emphasizing action and practice this morning.

What are some of the new concepts in educational administration, then? There is surprising agreement among the iconoclastic new administrators in this country, which you realize when you read their speeches or hear their talks or talk to parents and teachers in their schools. This phenomenon can be likened to the invention of the airplane, which took place at about the same time in history in five or six different places with no communication among the inventors. The French claim to have invented the airplane just about the same time that Italian planes were invented, all just about the same time the Wright Brothers made their flight. Why was that? I think it is because problems become so evident at about the same time that intelligent people come to similar conclusions, even though they do not communicate with one another. So it is with some of the new concepts in educational administration. You may see them manifesting themselves in separate spots that have shared almost no communication. They are not yet general enough that they can be said to be creeping into the field; and they certainly have not become a part of effective instruction in university training programs.

Let us look at goal setting among the new administrators. Primarily, it revolves around the administrators' operating with new priorities. The new goals are production oriented. The words *accountability* and *responsibility* do not frighten the new administrator. He asks, "What are the outcomes, the ends, the goals, rather than the means?" When we say, "How effective is a special education department?" for example, we should be saying, "How many children have been able to move effectively in the school life of which they are a part? How many children have been able to move effectively into life?" However, we ask, "How many teachers are on your staff? How many kids have been added to the program? How many tape recorders do you own? How many kids are in nongraded situations?" And so on. All the latter questions are completely irrelevant to production; they are like assessing whether children are learning by looking at the bulletin board. So the new educator is production oriented. He does not mind going before parents and pointing out that the kids are not reading, and that it does not matter how much money we spend, what the qualifications of our teachers are, or what types of school buildings we have if the kids cannot read.

The new administrator gives priority to the client, and it is the interest of the client that stands uppermost in the decisionmaking process. That means that he rejects the displaced goals of the system. For example, it is true that we have responsibilities to a teacher who is now sixty years old and very ineffective, but *we have greater responsibility* to the children and their learning. These administrators are not playing the typical hearts-and-flowers theme about children.

One of the best tip-offs that an educator does not give a damn about children is if he tries to explain his actions in terms of his obligation to the students in order to hide from some of his bad decisions. In a nonsentimental way, the new administrators say that what happens to students (reflected in the opinion of the student's advocate, the parent) is preeminent in decisionmaking, far above considerations of the staff, of preserving the institution or its integrity. Integrity yes, if it is based on production. Integrity no, if it is based on a typical code of ethics that boils down to "Thou shalt not wash dirty linen in public." It has nothing to do with responsibility to clients. Accepting these priorities means that the new administrator rejects the typical referent groups. He knows that, to be effective, he cannot permit himself to get embroiled in the elementary principals' groups, for example. Sometimes he rejects without thinking; but knowing their ability to retard change, he rejects the "professional" groups; he rejects the literature; he rejects what the profession and the professors say. The new priorities require also that he know the difference between latent and manifest goals. He must recognize that the manifest (or stated) goals are not achieved in our schools, since what the schools are pursuing are the latent goals. For example, it has long been one of the latent goals of the schools to produce dropouts, while we manifest talk about educating every child. What this means for special education is that, to be effective, you must stop listening to the propaganda about special education and recognize that its major goal in the public school today is to remove disruptive children from

classrooms, to keep them segregated and isolated from the remainder of the school so the teachers will be happy. As an administrator, that may not be your goal, but it *is* the goal of your institution. Until you recognize that fact, you will not be able to administer an effective program, because your colleagues will take you in by agreeing with you, as long as you keep those kids in their place.

The language of the new educator is humanistic. *Humanism, group dynamics, human relations, authenticity*--these words are common in the vocabulary of the new administration; and they are also becoming realities in the new schools. All people in those schools behave as human beings, including the administrator. For example, he is free to make mistakes, while the typical administrator is not. Present conceptions dictate that the administrator must always be right; he must never make a mistake; he must never admit one; he must never need help. There are only two occasions you ever find an educator asking for help: one is when he feels he does not really need it; so he is secure enough to say, "I need help"; the second is when he is sure you cannot help him and is just trying to put you in your place.

The new administrators put priority on eliminating the trained incapacity of the professional educator. Trained incapacity refers to the inability to think outside constraints that are imposed on you by experience, tradition, and training. In the new schools, all practices are up for review, and many of them are being rejected. Such introspection is something that most graduates from doctoral programs in education have not been educated to do. We must find a way of doing it.

The new man sets up divergent approaches; he ignores taboos, such as certification, tenure, curriculum, sequence, scope--all of which impose unreal limits on our thinking and oppose our establishing a true learning atmosphere. I think special education has helped us to face up to one taboo that limits our ability to educate: the schoolman's common belief that behavior is separate from education. That belief underlies contracts that permit teachers to throw out children. That is why teachers want *someone else* to handle discipline. But special-education-trained people see that their goal is to change behavior; they know that not only cognitive behavior but also a great deal of emotional and social behavior falls within their responsibility. One of the antieducational beliefs in the schools is that you do not waste time changing someone's behavior; you are too busy teaching.

A second area in which we may talk about new concepts is in how we organize the school. The new concept takes a systemic approach, looking at the learning milieu in its entirety. For example, a new concept of organization is to deliberately program in outside influences, such as the student rights movement. The new administrators discuss student rights, student grievance procedures, and parent grievance procedures. These are all brand-new to educational administration; we have traditionally tended to keep outside forces out. The systemic approach means that the administrator designs in feedback loops that force the institution toward a production- and client-centered approach. In Martin Luther King Elementary School in Syracuse, New York, for example, this means that the school is wide open: anybody may go into any classroom

at any time and stay as long as he wants, so long as he follows teachers' directions. If he is forced into the principal's office, he first gets a little lecture about being overly conscious of the authority of an ignorant official. Then he gets sent to wherever he wants to go. Some bureaucrat has suggested that the practice is dangerous for the kids and for the teachers; but each year that passes provides another year of evidence of no one being killed or raped. Discipline revolves around a statement of students' rights; discipline not only becomes a teaching experience but enables the child to learn how to get his rights later in life, which is what education is all about. If he first learns that he has rights that will be defended and protected by teachers and principals, he will then learn how to have his rights defended and protected by a Supreme Court, a President, a governor, a college president, or a professor.

The new school is organized to promote problem solving. Although it is not legitimate in most educational institutions to have problems, solving problems is actively promoted in the new concept of educational administration. The school is organized around a *process* for identifying and solving problems. The administrator does not institute procedures that are in themselves solutions so much as he institutes a decisionmaking process that assures some continuity, life, and dynamic self-correction in the school. This requires a great deal of decentralization and delegation.

Another change is that the new administrator recognizes that it is the milieu--the *entire setting* in the school--that teaches, not the

classroom, the teacher, or the lesson. Thus, Jeffersonian concepts of authority govern the new administrative concept: *All authority resides in the willingness of the subordinate to accept an order.* This organizational philosophy requires an entirely new stance than the divine-right concept that now governs all the system. The new organization therefore promotes involvement. It is characterized by openness and flexibility; and it involves an entirely new approach to the role of specialists. I know that some of you who read the literature and see the training programs feel that we are moving toward more rigid specialization. However, the new administrative concept will deemphasize the role of specialists. They have been introduced into the organization in such a way as to cut off communication between the teacher and the student; therefore, our structure renders them ineffective. Now, we are going to use these people as resources, which probably means a return to a group process in which the teachers in a decision group learn to analyze their colleagues' weaknesses and strengths and to use them as they are appropriate for problem solving. Consequently, the specialist will exercise his skills in peer relationships and will demonstrate his competence in solving real problems.

Administrators are also trying new ways to stimulate people to contribute to the school, basically by keeping problems before people and stressing their responsibility for solving them. That means that the administrator learns not how to *help* people in the traditional sense, but that the best help is to push responsibility and decision-making back to the people. Whenever someone comes to ask for help, no

matter who it is, the administrator asks such questions as: "What are *you* going to do about it? How have *you* tried to handle this so far? What are you doing?"

This approach does two things. First, it pushes decisionmaking back nearer the problem. Second, it builds faith in the questioner that he too is smart, that he too can make effective decisions. The first criticism to this, of course, is that such an administrator is not supporting his staff. But supporting is not his function; you can buy crutches a lot cheaper than you can buy administrators. Rather, his job is to help each person recognize and use his own potential. The administrator's task is to help define and enforce *ends;* the means will be left to the teacher.

In stimulating people to contribute, there is a judicious use of administrative powers. The new administrator is not easily labeled as authoritarian or democratic; in fact, there are times when he will look absolutely dictatorial. Why? Because he has consciously determined that this is the best means of moving adults to change their behavior. At other times, he may be very open and even wishy-washy; again because he has decided that this is the best way to get where he wants. I believe this is what Getzels means by *transactional,* although we have never quite defined this term for administrators. They have been taught the laissez-faire approach in the name of democratic administration.

Another activity of administrators is evaluating. The best evaluation is one that is intrinsic to the process; hence, the administrator mobilizes incentives from many sources, which he then builds into the

organization. For example, the best way to improve a teacher's work is to give the kids a way to protest bad teachers. The next best way is to give parents ready access to the classroom. Why? Because it is adult behavior which accepts the responsibility for decisions; and this responsibility is best enforced by the affected children and their parents. The next best way is to have teachers visit each other, or to create conditions in which they have to work together to achieve goals. Thus, the new administrator is intent upon mobilizing self-evaluative and self-renewing incentive systems.

Evaluation is best built around behaviorally stated objectives. (My terms have not been at all behavioral today, although you should have no trouble putting them in a behavioral context.) The school staff must define the behaviors it seeks and then evaluate its actions according to whether those behaviors occur. Effective evaluation should focus on goals and reject peripheral matters. If your goal is for children to read, it does not matter whether they read Black Panther literature, Eldridge Cleaver, John Birch literature, or Playboy, i.e., the means is not what you are going to evaluate.

To close, I want to make a few comments about college programs. Administration, which connotes leadership or statesmanship, is not, nor is it likely to become, strictly a rational task. The old methods of training education administrators indoctrinated them with bureaucratically approved values. That was the 1920 to 1955 period. The newer methods, that is the UCEA-type of method, strove to be value free. But now our methods must be designed to help a man see the results of his

valuing process. Why? Simply because problems that yield to purely cognitive approaches never come to an administrator; other people can handle them. But administration is a process of identifying alternative solutions to a problem, all of which are more or less disadvantageous, choosing one of them, and devising a way to put it into action.

How could training for problem solving be handled in a doctoral program? First, we would define what a graduate from our doctoral program should accomplish in a school, what kinds of goals he would achieve. Then we would tell the student that his training will be to solve problems like those he will have to solve to reach the goals. There might be courses, there might be professors, there might be libraries; but the student would not be required to utilize any of them. Instead, he would be put in as real a situation as possible to learn as he solved problems how to best go about problem solving in the future.

In training administrators, we have forgotten that the reason for seeking knowledge is not merely to know and accept the world, but to change it. It is fine to know *what is*; but if *what is* is destroying our world and not achieving the manifest goals of our organization, we must be taught *what is* in such a manner that we can move to change it. This we have not done. The end of knowledge is not just to know; it is to use that knowledge. We have forgotten that change requires setting goals and selecting priorities, a subjective and value-laden process. We have dehumanized the school administrator to the extent that he is not supposed to impose his values but rather to protect bureaucratically approved ones.

We have failed to translate words into behavior. I have heard professors at national meetings recite the Getzels model and illustrate idiographic behavior with strictly nomothetic examples. I have seen graduate students present papers that are as dull as the ones that they usually hear at conferences, full of words that they do not understand, that they have heard but that they cannot translate into their own terms. We have failed, then, to develop a process for valuing among administrative students, as we have failed to translate knowledge into action. The student, therefore, has to go out on his first job and learn the hard way.

We have forgotten that the milieu teaches more and teaches it more indelibly than the teachers, the lessons, or the materials, which is just as true for adults as it is for children. We have tried to teach humanism in an inhuman context (the graduate school), equality in a status-ridden context (the graduate school), responsibility in a non-responsible context (the graduate school), effectiveness in an ineffective context (the graduate school), problem solving in a problem-denying context (the graduate school), and authenticity in one of the phoniest possible contexts (the graduate school). To educate effective administrators, we must create a graduate school that is congruent with our objectives, or we shall never improve the American educational system.

DIFFERENTIATED STAFFING--SO WHAT?

Robert Gourley*

I am here to talk about differentiated staffing. As William Wayson indicated earlier, there is nothing new in education, but there *are* fresh ways of organizing a staff; we are attempting one in Beaverton, Oregon. I want to share with you some of our ideas on what our differentiated staffing means and what its potential is for pupils.

We have defined differentiated staffing as "that staff utilization based on teacher competence and responsibility which helps pupils achieve specific behavioral objectives." In the next few minutes, I will (1) list some apparent weaknesses in present staffing patterns; (2) outline the steps in our differentiated staffing project; (3) define the responsibilities of the participants; and (4) sketch the staff organization of Aloha High School, the first pilot school.

The following are some of the weaknesses in current staffing patterns:

1. Educators have failed to capitalize on the talents and knowledge that are available outside the profession.
2. The accepted mode of entry into education is only through a college or university teacher preparation program.
3. The absence of career patterns in teaching is a major factor

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in the loss of highly competent personnel to administration or positions outside education.

4. Teacher preparation in the traditional pattern has been primarily a unilateral responsibility of the colleges.
5. Current instructional and learning effectiveness is less than optimum.
6. Present staff utilization requires that all teachers perform the same tasks with little regard for training, level of competence, experience, or interest.
7. Traditional programs in preservice and inservice training attempt to prepare all personnel to perform the same tasks at the same level of competency in all skills.
8. Students of education have had little or no opportunity to participate as learners in the process of teaching before student teaching or internship experience.
9. Traditional teaching programs have not been meaningful to disadvantaged students from a wide range of economic and social levels.

The first shortcoming is that we really have not done a very good job of capitalizing on the knowledge and talent available outside the teaching profession itself. We bring in speakers on Law Day, and we have somebody come in on Career Day, but for the most part we really do not take advantage of the talents that exist outside the regularly employed teaching staff.

Second, at the present time, the accepted mode of entry into education is only through university programs such as the teacher preparation program. There have been some breakthroughs in such programs as Head Start, but we are talking about a kindergarten through twelfth grade operation. You must go through a teacher education program before you can come in and teach boys and girls.

The third problem with the present pattern has to do with the absence of career patterns in teaching itself. This is a major factor in the loss of many people into administration; and, as all of you know, there is absolutely no relationship between being a good administrator and being a good teacher--in fact, good teachers are liable to be poor administrators, and vice versa.

The fourth weakness is that teacher preparation in the traditional pattern has been primarily the sole responsibility of the college. The user institution has very little, if anything, to say about the teacher preparation pattern. It is pretty much left in the hands of the university to do that job.

We proceeded from the assumption that the current instructional organizational program is less than optimum, which is always a safe assumption. We think that perhaps the most important staffing problem right now is that we expect all teachers to do similar things. If you are one of a half-dozen high school mathematics teachers in your department, for the most part we expect every one of you to follow the same pattern: Take thirty kids into the classroom for an hour and talk to them; then, when the bell rings, send them out and take thirty more; and so on with similar routing operations. So, from classroom to classroom, you see similar teaching activities.

The traditional programs in preservice or inservice training, then, have been geared to prepare all teachers to perform the same tasks at the same level of competency. Furthermore, students in schools of education have little opportunity to participate in the process of teaching before the student teaching or internship experience. And given

the kinds of teaching they receive in college courses, this can be a serious problem!

Finally, it seems clear to us that disadvantaged kids gain little from the traditional teaching programs. I see no need to belabor this point.

Our plan to attack these staffing problems is as follows:

Step 1. Make an educational needs assessment. Students, parents, community members from all walks of life, and educational personnel will contribute to this assessment.

Step 2. Define and list appropriate behavioral objectives for children in grades one to twelve from a wide range of social and economic levels. (We plan to do this as objectively as possible; however, in the affective domain, we will settle for subjectivity and first approximations at this time!)

Step 3. Define the skills, competence, tasks, and vehicles necessary to implement step 2.

Step 4. Define the responsibility levels required of personnel to implement step 3.

Step 5. Write job (work) descriptions that satisfy the responsibility levels defined in step 4.

Step 6. Employ or train personnel in cooperation with participating agencies to fill positions defined in step 5.

Step 7. Use the personnel defined and hired (or in training) to staff a pilot school (Aloha High School).

Step 8. Evaluate and redesign as needed.

We then plan to implement a differentiated staff model in a junior high and/or elementary school (repeating the steps listed above). When models for these levels have been tested, we plan to implement the models of differentiated staffing throughout our district. This assumes a *measurable, observable,* degree of success in our project.

The philosophy of differentiated staffing indicates to us that no staffing model will be permanent, that individualized learning and individualized instruction are vital, and that "the classroom" will have as little geographic limitation as possible, e.g., an educational park setting for schools where the community, state, etc. become the "classroom", and where personnel from all walks and activities of human affairs are used in instruction.

The responsibilities of the project participants are listed below:

1. Beaverton School District will administer the project and provide the following facilities and services:
   a. The pilot schools (Aloha High School and a junior high or elementary school). The Aloha High School staff and other district personnel will:
      (1) Design a differentiated staff model cooperatively with members of other participating agencies.
      (2) Field-test this differentiated staff model.
      (3) Provide data needed for the design of training and retraining programs.
      (4) Provide clinical field experience for educational personnel.
   b. A related adult and occupational education program that will involve the business, service, and industrial communities in the learning process.
   c. An inservice program that will assist in the training and retraining of personnel for differentiated roles.
2. The participating agencies will:
   a. Assign college students from all levels and areas of interest as members of a differentiated staff.
   b. Assign interns to new roles in a differentiated staff.
   c. Assign college and university faculty members to the differentiated staff.

d. Provide a modified training program for part-time personnel who are beyond the normal age for traditional teacher preparation programs.
e. Provide periodic appraisal of the program.
f. Disseminate information about the program to the public and profession.
g. Study the implications of differentiated staffing as they relate to the certification of educational personnel.
h. Exchange information between this project and similar activities throughout the nation.

Figure 1 illustrates the curriculum organization at Aloha High. It resembles the venerable *core curriculum*, with three broad *domains*--"Man and the Social World," "Man and the Physical World," and "Man and Work and Leisure." But, the retention of departments that feed into the domains is designed to overcome some of the disadvantages of the core. The staff organization is illustrated in Fig. 2.

Although I plan to go into further detail in our afternoon discussion sessions, please keep one thing in mind: we use the words *teacher* and *teaching assistants* in a very broad sense. *Teachers* may be plumbers, lawyers, economists, even college professors! *Teaching assistants* may be interns, high school students, housewives, even skilled technicians! The basic thrust: to expose boys and girls to a wide array of (we hope) stimulating, skilled adults and peers.

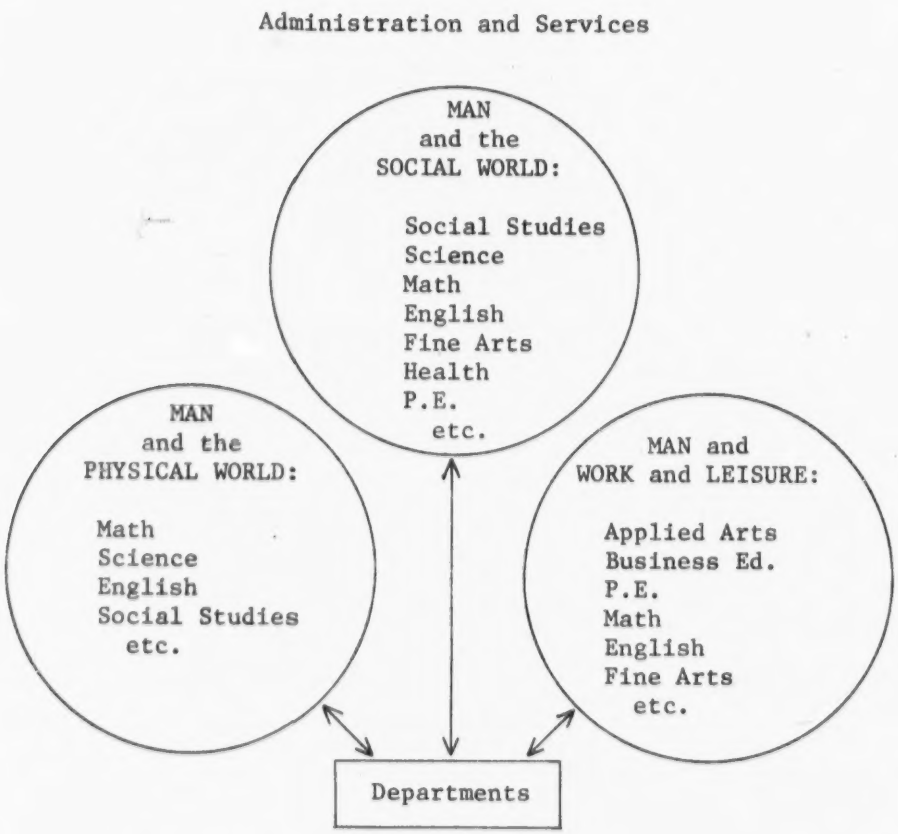
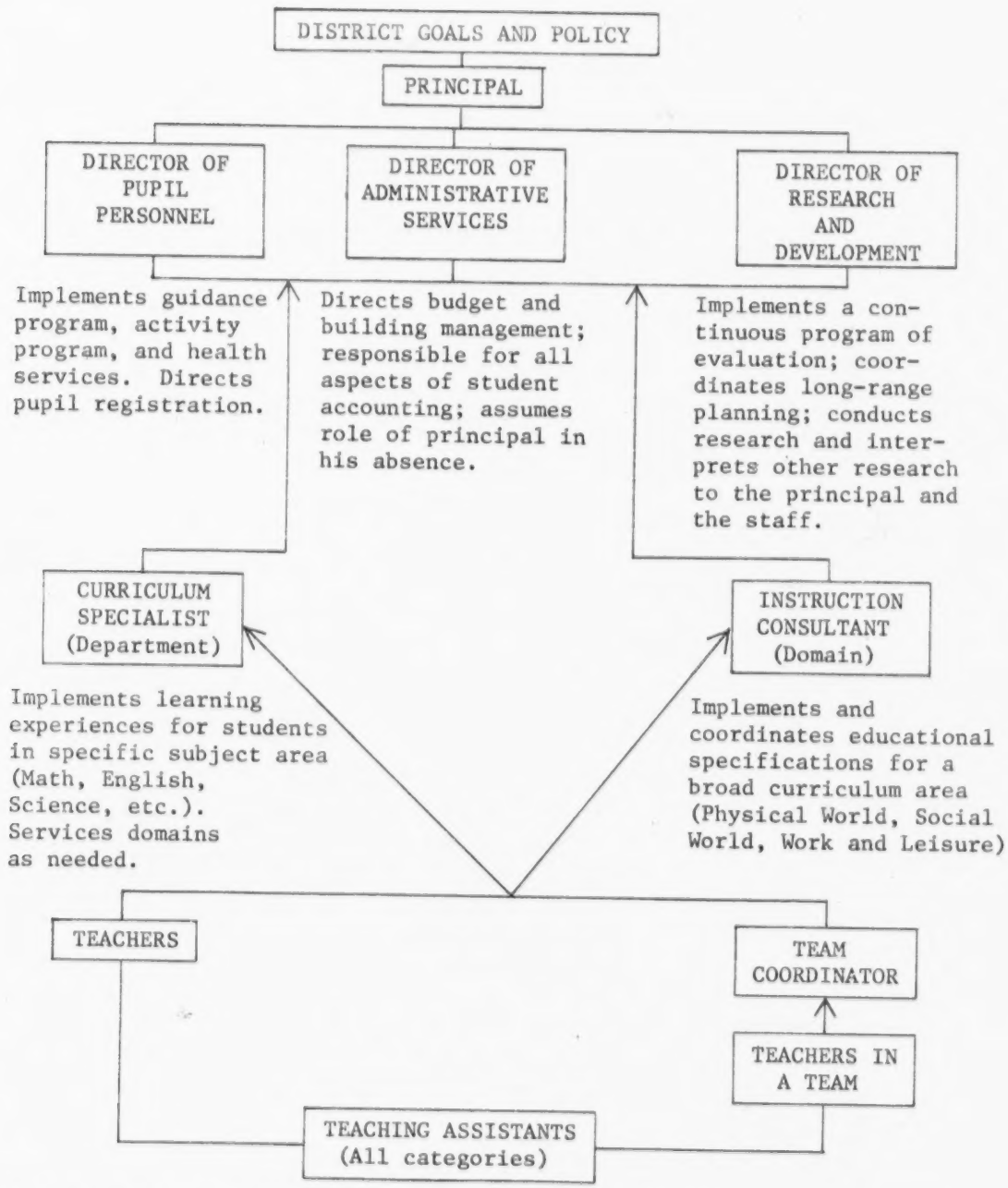


Fig. 1--Organization of broad curriculum areas, Aloha High School


DISTRICT GOALS AND POLICY
PRINCIPAL
DIRECTOR OF PUPIL PERSONNEL
DIRECTOR OF ADMINISTRATIVE SERVICES
DIRECTOR OF RESEARCH AND DEVELOPMENT
Implements guidance program, activity program, and health services. Directs pupil registration.
Directs budget and building management; responsible for all aspects of student accounting; assumes role of principal in his absence.
Implements a continuous program of evaluation; coordinates long-range planning; conducts research and interprets other research to the principal and the staff.
CURRICULUM SPECIALIST (Department)
INSTRUCTION CONSULTANT (Domain)
Implements learning experiences for students in specific subject area (Math, English, Science, etc.). Services domains as needed.
Implements and coordinates educational specifications for a broad curriculum area (Physical World, Social World, Work and Leisure)
TEACHERS
TEAM COORDINATOR
TEACHERS IN A TEAM
TEACHING ASSISTANTS (All categories)

Each leadership position carries with it the obligation to seek consensus or make interim decisions at that level if group agreement is unattainable and an impasse obstructs the educational program.

Fig. 2--Differentiated staff experiment, Aloha High School

A NATIONAL STUDY OF THE ADMINISTRATION OF SPECIAL EDUCATION

Thomas D. Marro and John Kohl*

Dr. Marro: It occurred to me while attending various meetings around the country, such as the Council for Exceptional Children and our consortiums, that we talk a great deal about local administrators of special education, and we debate about what they ought to have in the way of training and background. However, we know very little about them, except that they supervise programs at the local school district level, the county and intermediate unit level, and the cooperative board level (such as Illinois and New York have). Since we train them, we ought to know more about them. Many studies have been conducted concerning principals, superintendents, social studies teachers, etc.; we felt that we ought to conduct a study of the administrator of special education. We submitted our proposal to the Bureau for the Education of the Handicapped, and it was funded.

I would like to begin by describing our procedure, some aspects of which are already in progress. First, we had to obtain lists of names of these local administrators (and let me tell you, it is worth our $50,000 just to report the experience of getting names from all the

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fifty states). Although Oregon, for example, provided us with a list right away, several states did not have such lists. In fact, our own state of Pennsylvania did not have a list of the supervisors of its special education programs at the local level.

In one state, the state director, who was new, said, "I don't have a list like that, but I'll tell you what I'll do. I'll send an administrative memo to every county superintendent and ask him to send you a booklet (they have booklets listing all the personnel in the county); and while they're sending you one, I'm going to ask them to send *me* one so that I can have a list, too."

We telephoned every state director to explain our study and the kind of special education administrators we were interested in. Then we sent out a questionnaire. Our questionnaire was a two-phased one. The first part was a double postcard on which there were four or five questions. The postcard served as a screening device to determine those who would receive the main questionnaire.

The main questionnaire had questions relative to background, experience, training, attitude, etc. We ended up with about 78 questions. If we get the kind of response we hope for, we will have some interesting information. (One of the reasons we wished to be here was to ask you to remind the local-level special education administrators you know to respond to our questionnaire as soon as possible.)

After we analyze our results and do some preliminary evaluation, we will twice bring a distinguished panel of special education administrators to Pennsylvania State University to guide us in the evaluation

and use of our information. We hope our study will contribute to improved special education programing.

Because I can only be involved in this study 25 percent of my time, due to commitments in other federal projects, I needed some strong research assistants. Fortunately, I went to our college research bureau, which is headed by Dr. John Kohl; he will tell you something about the design of the study.

Dr. Kohl: As I reviewed the literature in special education, I found that most of your research efforts, using the analogy of the theatre, have looked at the audience. In our production we look at the actors, the scenery, and the roles, trying to see how the actors interact with the producer, the director, the stage hands, the crew, etc. So our study should be unique in that respect, giving us information that we do not currently have about the administrator of special education.

A colleague of mine at Pennsylvania State University took a poke at you in the April 1970 issue of *Exceptional Children's Journal*, indicating that he felt many productive lines of inquiry had not been utilized in special education. I think he must have read our proposal prospectus before he wrote that, because we do strive to look at some of the issues he posed to you.

In our study we glance at group processes. We try to treat the world of the special education administrator as a social system with subsets. We look at the decisionmaking process--how the administrator interacts with influential policy makers, how policy is determined. We are trying to paint a very broad landscape, so that those of you

who are interested in the role of the special education administrator will have much information to choose from. We are addressing, really, three audiences: we hope to somehow stimulate administrators in special education to look at their own professional image; we hope to have some kind of effect on the training programs in universities training special education administrators; and finally, we hope to entice research scholars from other areas to take a look at this particular area, to become interested in exploring, as my colleague said, a rather virgin territory.

Realistically, we expect to have the effect not of the bomb, but rather the fallout. We hope that the information we gather will stimulate some of your graduate students to do their dissertations in this area. We hope to take some tentative looks at organizational theory through role behavior. We will examine some of the bureaucratic functions that special educators are involved in: offices, status, role expectations, competencies, knowledge, etc.

Again, we will look at administration as a social process, probing to a limited extent into the structure, function, and operation of the system. We will look at decisionmaking as the decisionmaker (we hope this is the special education administrator) interacts with the policy setters. We expect to have a wealth of information, much of which, unfortunately, we will not be able to fully explore at the present time. There are a number of personal characteristics that interact with the data, e.g., age, sex, experience, training, and attitude.

Tentatively, we have identified 1800 potential administrators of special education. (In our study, an administrator of special education is defined as one who spends at least 50 percent of his time in administration and supervision and has at least two or more of the eight categories of exceptionality in his charge.) Most of our information will be put on computer tape, which we will share with the bureau. We hope this information will be available to those of you who are interested for reanalysis. One possible use of this tape that we had not anticipated would be in compiling a national directory of local administrators of special education.

We will attempt to disseminate our findings as widely as possible. We are asking for time and space at meetings of the American Educational Research Association (AERA) and the American Association of School Administrators (AASA) and at some of your own meetings. I think this is just a beginning in this area. We know that we will probably be criticized for lack of sophistication in some of the analyses, and that we will not deal with many of the things that might be done; but at least it will be a beginning. We hope it will be of interest to most of you.

INSTRUCTIONAL TECHNOLOGY

William Deterline*

Features

It is unfortunate that the word *technology* conjures forth a variety of images completely unrelated to instructional technology. Some people believe that instructional technology means the mechanical destruction of human feelings, values, and subjective judgments. To others it means ignoring students as humans. And some believe that instructional technology is an elusive *something-or-other* that is not only antiteacher but anti-present-day-education. What, then, is it? Instructional technology is a hard nosed, slightly cynical approach to the design and implementation of those processes and events that make up instruction in any setting, whether education or training oriented, for all kinds of students.

The instructional technologist is data oriented. He is always skeptical of the view that what we are doing now is the best of which we are capable. In addition, he asks for evidence that we do in fact accomplish that we *say* we accomplish. To the teacher who says that he teaches creativity, insight, judgment, or positive attitudes, the instructional technologist will say, "Prove it to me." He does not ask questions just to be hostile or intellectually impressive. His concern

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is that instructional objectives be accomplished and that their accomplishment constitute demonstration. Unfortunately, the instructional technologist often finds a teacher's reply frustrating, e.g., "I can't provide any evidence, but I just *know*"; or "I don't really have any interest in looking any further, or trying to change what I'm doing, in the hopes of doing better and being able to prove it!"

An instructional technologist holds the simple view that if a thing is worth doing, it is worth doing well; and that some type of evidence can be produced indicating that it really was done. He is, himself, directly involved in instruction or instructional design and development. He might be a classroom teacher, a materials developer, a research psychologist, an educational researcher, a curriculum or evaluation specialist, or an educational administrator. What makes him an instructional technologist is his empirical approach to instruction and his complete acceptance of the notion of accountability.

Accountability in instruction has several facets. First, accountability means that the components of instruction, all of them, must be held accountable for the successes and--what is more important--for the failures of the students entrusted to them. It is not enough to attribute failure to deficiencies of intelligence, motivation, attitude, or effort on the part of students, when the sources of instruction are accountable for the results. Second, accountability must involve more than the simple assignment of blame for failure. It must lead to the detailed identification of every detail of failure, the elements of instruction that failed, and an empirical development of something better and more effective. Third, accountability will probably require (1) a

series of revisions; (2) detailed evaluations of the instruction in terms of its results; and (3) a reliance on data--objective where possible, subjective where necessary--but *data in a systematic form.*

Educational research is not necessarily instructional technology oriented, but instructional research is, of necessity, a critical element of instructional technology. Much of educational research is interested in the question, Which does better, the experimental group or the control group? Instructional research, however, is more interested in the question, What did we try to do, and how close did we come to doing it? The contrast is between the ideal and the achievement, between the intended and the actual learning outcomes. If the actual results fall short of the hoped-for results, then it does not matter very much whether those results were significantly better than method or material A, B, C, or Z.

The instructional technology approach does not ridicule pure and basic research. Obviously, there is always a need for research on basic variables and functional relationships. Thirty years ago the Manhattan Project, utilizing the results of decades of basic research, embarked on an applied research effort with a specific applied goal. The Apollo Project also drew on basic research to accomplish an engineering goal. Without the basic research data, neither of these massive, applied efforts could have been successful. On the other hand, the basic research by itself did not accomplish the two major applications until the applied efforts themselves were carried out as *applied research projects.*

Educational technology, as those of us who call ourselves instructional technologists define it, is a meeting ground for several approaches, disciplines, and methodologies. Perhaps the most influential, both directly and as a catalyst, is the empirical behaviorism of B.F. Skinner and his direct contribution, programed instruction. Effective programing, first of all, is not possible without *operational definitions of the student's terminal behavior*. Second, the above requirement implies *instructional objectives*, perhaps the most powerful tool of the instructional technologist. Third, programs also require *guided and directed responding by students*. Long before the first program was written, every teacher knew that active, interacting students learn more and learn better than passive or noninteracting students. Knowing it and doing something about it, however, are two different things! Programed texts, and some of the more recent multimedia programs, including interactive lectures and programed lesson plans for teachers, generate an interaction that can be guided, modified, and adapted in a fashion that no student ever saw twenty years ago.

Programed instruction is only one contributor to instructional technology. The systems engineering approach to the design and development of any complex task has also contributed to instructional technology. Whether *developing* an instructional component or set of components, or *managing* instruction by these same components, a quality control element, i.e., a continuous evaluation that measures actual progress against planned progress, is a necessity. The consequences of one step are used for revising and correcting that step or the steps

that led to it. Man can hardly build or manage a television set, computer, or complex missile system without a control element. Many of the features of the systems engineering approach are directly relevant to instruction: keeping track of what happened with what results, and keeping track of what worked or went wrong.

What about hardware? Is hardware a necessary contributor to instructional technology? We find many hardware manufacturers encouraging the idea that instructional devices, or rather informing devices, are *the* critical elements of instructional technology, although the instructional technologist constantly says, "No, hardware is neither necessary nor sufficient to our approach."

We have all attended educational conferences and conventions where evidence of this attitude is pervasive. For example, a few months ago I attended a major convention; in its vast exhibits arena I saw a sign advertising "The latest in Educational Technology." Of course that attracted my attention, so I hurried to the booth to see this new marvel. It was a television camera! And instructional technology is not a T.V. camera. Instructional technology is a philosophy, a point of view, a process, methodology, an empirical approach to instruction.

I do not reject hardware, but I do reject calling hardware *instructional devices*. *Instructional* implies something that may or may not be accomplished by the device. Whatever the device might be, it can present information in various forms, but whether it deserves to be called an *instructional* device is an empirical question. The same is true of so-called instructional materials such as textbooks and work-

books: when learning occurs, we can call them instructional devices; without evidence of learning, they are only presentation devices.

Perhaps the most influential feature of instructional technology is the instructional objective. Without specifications detailing exactly what we are trying to produce, certain instructional decisions lack precision; as a result, evaluation involves more guesswork than it should. Instructional programing uncovered the necessity and value of objectives. And as the systems approach entered instructional design and implementation, the system engineer's demand for specifications--of desired output and results, and of the precise step that is to accomplish each result--made perfect sense.

Actually, my position may sound like a simple and obvious one; but not everyone can accept it comfortably. I have discussed instructional and educational research, programed instruction, the systems engineering approach, and instructional objectives to illustrate the measurable components that make the accountability notion workable and practical. Teaching has a purpose, with identifiable and measurable consequences. If a student or group of students is subjected to some event that is supposed to produce a consequence, but does not, should that event be called *teaching* or *instruction?* If a teacher, book, or film presents information to students, but they learn nothing as a result of that experience, were they taught? They were informed, they were told, information was presented, but how can we justify saying that they were taught? An instructional technologist generally makes a distinction between the processes of *presenting information* and

instructing. If there is evidence that the presentation resulted in students achieving certain objectives, then there is some basis for identifying that presentation as instruction. Within this framework, there is a logical flaw in such statements as "I taught them, but they didn't learn"; or "Unfortunately, the students couldn't learn from that instructional film"; or "That teaching device does a beautiful job. No, I don't know how well students learn from it; we haven't used it yet in the classroom."

The empirical viewpoint asks, In the absence of data indicating that an event or component produces learning, why call it instructional, or refer to it as teaching? If the data do not indicate that it teaches, then accountability requires that we make whatever changes are necessary to make it do what it is meant to do. Then we can all feel more comfortable. We will be able to justify the label *instruction*, not on faith alone, but on evidence that students did learn what the presentation was supposed to teach.

Developments in Instructional Technology

The U.S. Office of Education, more than any one discipline or group of professionals, is responsible for the appearance and growth of instructional technology. Sometime during the past twenty years, the mission and philosophy of the Office of Education underwent a profound change. There was a time when it seemed to exist only to support professors caught up in the publish or perish syndrome. There seemed to be little concern for applied research, implementation, or dissemination

programs. Suddenly, however, the Office of Education was given powerful tools with first the National Defense Education Act, and later with the Elementary and Secondary Education Act. Other congressional acts followed, and a highly competent staff was assembled, who learned quickly how to use those tools. Now the Office of Education wanted to see results, and to see them in the schools, not in the publications listings of educational researchers.

During the past year I visited many institutions where we could have expected instructional technology to have taken hold, where the limits of this empirical approach to instruction should be under investigation and application. Some of the things I saw were impressive, exciting, and encouraging; some were appalling and depressing. Teacher education in many places, including some of our most prestigious universities, is still based, apparently, on the assumption that *informing* is *teaching*. Where this assumption holds, the emphasis is placed on presentation skills, platform techniques, and the assembling and presenting of information. These procedures might well be critical, but concentration on teacher classroom activities alone is not enough. Some teacher-training institutions apparently continue to accept the notion that an interesting and technically accurate presentation is all that is required of a teacher, and that any failures in learning belong to the student. But at many other places, accountability has become the name of the game, and teaching is defined principally in terms of results, i.e., changes in student performance. Instructional objectives have also entered teacher education, not only as a tool teachers must

learn to use, but also as a method of designing teacher training itself. That is a major change, one that appears necessary as the demands placed on teachers change and expand.

Textbooks in educational methods and educational psychology have always talked about the importance of student-centered instruction, of approximating individualized instruction, and the impractical notions of the ungraded school, individual progress advancement, and individual learning paths. These ideas are so appealing because learning *is* very individual; grouping students together and treating them in the same way does not change the individual nature of learning.

Dr. Robert Gagné assumes the position that we must learn to provide individualized instruction that is matched with each student and with the requirements of the objectives. Gagné discusses the nonadaptive nature of most teaching, which tends to rely on the same methods, materials, and conditions, disregarding the academic and behavioral objectives. Gagné believes that the data clearly indicate that different types of learning require different types of instruction. Further, he believes that instruction can only be accomplished for certain types of objectives in a completely individualized setting.

Although there had been experiments in individualized instruction, no major experimental move took place until five or six years ago. Many school systems, armed with the powerful tools of instructional objectives and the empirical, accountability approach, used foundation or federal (and, in some cases, their own) funds, and embarked on major individualization projects. Dr. Jack Edling, of Teaching Research,

Monmouth, Oregon, recently completed a two-year study of individualized instruction in the public schools. He identified some six hundred school systems with major individualization efforts and prepared detailed case studies on forty-six of them. I recently visited some of these schools and, as Dr. Edling noted, it was interesting to see the variety of approaches that have been developed. Instructional objectives are a common denominator, but beyond that, the differences are more striking than the similarities. Some schools have individualized within grades, while some have individualized only one or two grades. Some schools are completely ungraded; others are ungraded only for certain subjects, such as a math sequence.

Individualized instruction does work, and it is interesting to watch it in action. There are no hard data yet to indicate that individualized instruction is any major improvement, but the people involved, including the students, generally feel that it is. Teachers say they now work harder and do more managing and tutoring than ever before; but, although the work is harder, they also say it is more gratifying and more visibly successful.

Programed instruction, which many people had written off a number of years ago, is still very much with us. There are programed texts and programed multimedia packages of many kinds, programed seminars, programed class discussions, programed lesson plans, and programed laboratory classes. With programed media, objectives are used to design the presentation, and the students are in some manner required to respond to the information as it is presented. The presentations are

tested and revised until they do help most students learn most of the objectives. Most programed materials are empirically developed and designed as interactive tutorials. Here again, the instructional technologist avoids assuming that anything works. No matter how strongly the author or subject matter specialists might feel about the instructional value of an untested presentation, the instructional technologist requires data, the only relevant data being student performance.

Most of the fifteen Regional Educational Laboratories use the same empirical approach. They are less concerned with conducting basic research than in developing materials, methods, and systems. One of the directors told me that it is difficult to find graduates from our graduate schools of education who have learned anything about applied research, development, and implementation. Moreover, most education graduate students have not been taught to use the results of research as a basis for revision and improvement. Apparently, all graduates have learned to view research as a means of answering, Which is better, A or B, the experimental or control treatment? The literature is full of reports that A is better than B at the .001 level, although examination of the group means reveals that neither group learned very much at all!

The research that the laboratories are primarily engaged in asks a different question: If A represents the objectives we want our students to achieve, and B represents their actual achievement resulting from a presentation or material, how can we make B match A? It is interesting to note that materials that have been developed empirically have data indicating exactly where the strengths and weaknesses are and

which objectives are not achieved uniformly. When a teacher, or a school, has data about the materials being used (and we usually do not have data about intuitively developed materials), action can be taken to strengthen the weak parts of the instruction. The teacher's flexibility is effective for this purpose.

One of the new roles teachers are learning in individualized instruction settings is how to relegate the *informing* function to other materials and media. The teacher then supplements her program with other materials. She is free to diagnose and evaluate progress and problems and to help students individually or as a group. A teacher's potential to be flexible and adaptive is sharply restricted when she is responsible for disseminating vast amounts of information while she is trying to teach.

Instructional Adjuncts

I maintained earlier that hardware is not synonymous with instructional technology, but that it is an adjunct to be utilized where it is advantageous. For example, the computer is a most attractive type of hardware with capabilities for education. Where instruction is individualized, then record keeping, scheduling of students and instructional resources, test scoring, diagnostic and remedial assignments, and other requirements suggest using the computer.

The most glamorous role for the computer is computer-assisted instruction (CAI), ranging from tutorial teaching to drill and practice following initial teaching by another means. However, too many practical

and applied questions remain to be answered before the eventual roles of CAI can be determined. Another, perhaps more promising and practical, role for the computer is computer-managed instruction, which can range from simple record keeping to diagnostic scheduling, as well as scheduling and selection of tracks, media, and materials based on a cumulative evaluation of student progress. The computer has no magic that will make instructional technology unnecessary, but certainly the computer is a potentially powerful tool for solving many data storage and retrieval problems, such as the storage and retrieval of student data and instructional information, which create problems for instructional technology. Another problem is that most audio-visual equipment and materials are used less frequently than they ought to be. It is sometimes just too much trouble to arrange for the proper materials and equipment to be available at the appropriate time and place.

There are many logistics problems associated with the use of audio-visual materials. One solution is the media desk or media classroom, which involves keeping a complete set of all devices used in the school available at all times in each classroom. The teacher needs only to obtain the software from the library. This simplifies teaching tasks somewhat but balloons the budget requirements, since most of the devices sit idle most of the time. Another approach, also quite expensive, is the use of dial-access retrieval systems. Dial-access uses the familiar telephone dial and related relays or computer. The teacher, or student, can, by dialing a number, activate a video tape recorder, audio tape recorder, or motion picture projector. The audio

or audio-visual presentation is then fed to television monitors or speakers located in the classroom or student carrell. Instructional television and dial-access appear to have considerable promise for both group and individualized instruction. However, neither dial-access, with its elegant electronic capabilities, nor television, with its multimedia properties--and not even the computer, with its power--can transform ineffectual presentational materials into effective instructional materials.

Testing concepts also must change; many now see a greater place for criterion-referenced testing than for our more traditional norm-referenced tests in the future. The primary function of a norm-referenced test is to discriminate among students so that we can then identify their relative achievement. From a norm-referenced test, it is not generally possible to get a complete answer to the question, Can this student do everything described by the objectives? But a criterion-referenced test is designed to answer exactly this question--and not in relative but in absolute terms.

Accountability, individualized instruction, and empirical development all require criterion-referenced tests. Sampling objectives and revising items to make them as discriminating as possible is not enough from a criterion-referenced point of view.

Some of the early proponents of programed instruction startled the teaching community by claiming that programs would eventually replace teachers. Similar claims have been made about the computer and television. Actually, what did evolve was a changing role for teachers.

Some of the activities required of teachers *can* be replaced by other materials, media, and methodologies. Teachers then can spend their time doing what computers, television, and programed packages cannot do: they can function as guides, models, tutors, friends, helpers, diagnosticians, flexible and adaptive counselors; and, as mentioned earlier, they can supplement and support other components of instruction. Not every teacher will be able to do all of these with equal skill and competence; perhaps differentiated teacher functions will have to be identified so that teachers will specialize in the areas of their greatest competence. This kind of consideration was not necessary when the teacher was responsible for doing everything in the teacher-centered classroom.

Motivation and Reward

Motivation and reward, two of the basic concepts in all theories of learning and in all theories of education, are frequently attacked by empiricists. Too often, in education, the naive assumption is made that the responsibility for motivation belongs to the student; if he is not motivated, the blame falls on him. This view takes its most extreme form when a student is expected to remain "highly motivated to learn" even in the face of repeated failures, dull, tedious, and incomprehensible instruction, and subjects seemingly irrelevant to his future or the world he will live in. All of this is expecting too much. Accountability applies here as well: no matter how one defines motivation, all the components of instruction must be held accountable for generating and maintaining motivation among students.

Success is a powerful motivator for additional success, but failure is not; and neither is the threat of failure if the student has no real alternatives to follow that can lead him to success. Our views on rewards have been just as naive as those on motivation: the idea that learning is its own reward might well hold for some successful learners, but if a student cannot see any value, enjoyment, application, relevance, or meaning in something he is learning, it is unlikely that learning success in itself will be very reinforcing.

Dr. William Glasser's controversial book, *Schools Without Failure*, says, among other things, that our schools are most successful at teaching failure--at teaching students not only to expect failure but to view themselves as failures. Our schools do not provide enough systematic experience in being successful.

Glasser is not alone in viewing the schools as failing in the areas of motivation and influencing students' self-images. Ten years ago the educational structure was not very much concerned about dropouts. A dropout was viewed too often only as a nuisance whose departure was viewed with some relief: "I'm glad he's gone; he was nothing but trouble. Now we can concentrate on the *good* students who remain." The dropout was a write-off. Now, using all of the technology, intuition, and methods available to us, we are, here and there, trying to do something concrete for dropouts. We are not trying to pick up the pieces *after* the act of dropping out, but before, to convert the failing student to a successful one. To do this requires changes in motivation and reward, in teachers' roles, and an emphasis on individualized instruction and accountability.

Conclusion

Instructional technology is not concerned with change for the sake of change alone. Modern education has evolved with many empirically untested assumptions. We have too long relied on hope and faith when data could tell us whether or not our faith was justified or our hopes realized. We have assumed that certain things are true, necessary, and appropriate. We have done things to students in the name of many high-sounding ideas, without finding out empirically if we have helped, harmed, or affected the student in any way. An empirical approach to education, with all its complex and difficult responsibilities, should help us identify its strengths and weaknesses so that we can protect the former and strengthen or replace the latter. Apparently, judging from the data that are already available, there are ways of going about educating students that are better than the ways we have been using. The empirical methodology of the instructional technologist appears to be a very effective method of specifying these methods and putting them into practice. At some point the key decision must be made: Is it worth the headaches and problems that accompany a major change? Can we afford not to change? Must we avoid change in order to avoid the risk that the whole structure might collapse? These are not easy questions. If you are faced with these questions, in a small way or on a major scale, I hope that you will examine the data relative to all alternatives and visit some of the places to which I have referred. Look carefully at what happens to students, teachers, and schools. Do not expect perfection, but do expect to be impressed.

IMPLEMENTING RESEARCH FINDINGS ON ARCHITECTURAL AND ORGANIZATIONAL CLIMATES

Calvin W. Taylor*

Much of education could be described as pulpit centered and knowledge dispensing, in which the students do not get focused on very often. As a result, their eyes are on us, but too often their heads and their hearts are not with us. In return for what we do to them, they frequently give us only "eye service."

This was well illustrated by a young girl who had been in first grade for just a few weeks. One evening when she came home, Daddy asked, "What happened at school today?" And she said, "Oh, I had a very interesting experience. We were planting flowers in pots in the classroom and we ran out of dirt, so the teacher gave me an empty pot and sent me outside. And, you know, Daddy, while I was outside filling this pot, I suddenly realized that I was all alone--and I could have escaped!"

The Multiple Talent Teaching Approach

First, let us consider some of our research on human talents, since the outcomes could shake up certain traditional notions in special education. If we can "turn on" several different talents in students and get a profile of these talents, we get quite a different picture across

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talents for each student. If we kindle only one talent, we will get 50 percent above average and 50 percent below average (if we set the average at 50 percent, the median). If we activate two talents, we will find that about 67 percent of the students are above average in at least one of the two talents. For three talents, the percentage will be in the 70s; for four, in the 80s; for five, in the high 80s; and for six, we will arrive at the 90s. Almost all students will be above average in at least one of six important talents--a surprising, but wonderful, finding.

Looking at it the other way, the number who will be below average and tend to remain there in one talent will be 50 percent. For two talents, the percent will be in the high 60s, and so on until there will be about 90 percent who will be below average in at least one of the six talents. In other words, almost everyone is above average and almost everyone is below average in at least one of the six talent areas. There are very few who will stay below average in everything; almost everyone will be above average in something, if we just extend the number of different talents to six or more.

If we take the top 10 percent as highly gifted, we are doomed to have only 10 percent highly gifted in our educational systems when we emphasize only one talent--acting as if general intelligence (i.e., academic talent) is the only talent that exists. But if we are willing to consider other talents, we can increase the number of gifted. For example, by considering three talents, we can double the number; and we can triple the number who are highly gifted if we increase to six talents--which is extremely valuable.

Furthermore, as we have learned many times, if teachers can function differently, then students can function differently. Youth are ready to use their many talents, whenever the establishment is ready to provide new opportunities. If teachers conceive of themselves as talent developers, and students as having multiple potential talents, then all these talents can be "turned on" and can function instead of being almost all dormant or stifled during the students' entire educational careers. Moreover, students can acquire subject matter by using these different talents as ways of processing information (knowledge). They thereby acquire such knowledge by processing it in each or any of these different talent ways. Instead of everyone acquiring subject matter using only the first column of talents shown in Table 1*A*, we propose to scatter and broaden students' experiences by having them acquire different kinds of knowledge by different kinds of talents. One of many such possible curricula is illustrated in Table 1*B*.

What happens to students is shown in a clever illustration that came out of one of my classes when one artistic student did *not* write down exactly what I said. Instead, he recorded it as totem pole pictures, which he dubbed the *Taylor Talent Totem Trees*. This profile, pictured in Fig. 1, illustrates that almost all students can have a smile on their faces at some time and almost all students can frown at some time if teachers will be talent developers across at least six different talents. In such a classroom, students will take turns frowning and smiling across different talents, in contrast with a one-talent-only classroom, where only a few are smilers, leaving the others to be

Table 1A

DISTRIBUTION OF 24 CLASS HOURS UTILIZING ONLY ACADEMIC TALENTS

Content Acquired	Talent Processes							Total Hours
	Academic	Creative	Communication	Planning	Decision-making	Forecasting	Other	
Language Arts	3	-	-	-	-	-	-	3
Social Studies	3	-	-	-	-	-	-	3
Humanities	3	-	-	-	-	-	-	3
Arts	3	-	-	-	-	-	-	3
Biological Sciences	3	-	-	-	-	-	-	3
Physical Sciences	3	-	-	-	-	-	-	3
Mathematics	3	-	-	-	-	-	-	3
Other	3	-	-	-	-	-	-	3
Total Hours	24	-	-	-	-	-	-	24

Table 1B

DISTRIBUTION OF 24 CLASS HOURS UTILIZING DIFFERENT TALENTS

Content Acquired	Talent Processes							Total Hours
	Academic	Creative	Communication	Planning	Decision-making	Forecasting	Other	
Language Arts	-	1	2	-	-	-	-	3
Social Studies	-	1	-	1	1	-	-	3
Humanities	2	1	-	-	-	1	-	4
Arts	-	1	1	-	-	-	1	3
Biological Sciences	1	-	1	-	1	-	-	3
Physical Sciences	1	1	-	1	-	-	-	3
Mathematics	1	-	-	-	1	1	-	3
Other	-	-	-	1	1	-	-	2
Total Hours	5	5	4	3	4	2	1	24

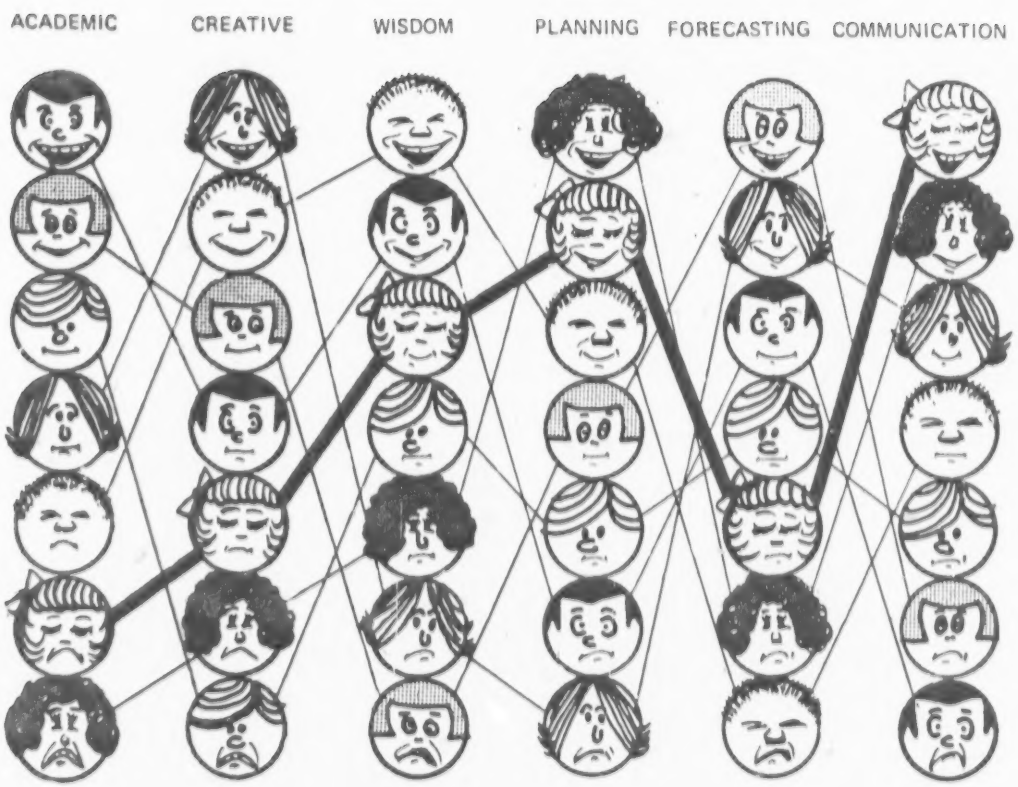

Fig. 1--Taylor Talent Totem Poles

frowners (who perhaps continually frown until they drop out one way or another.

To illustrate from actual classroom experience, one teacher recently sketched all twenty-eight of her students, showing how they bounce around, being high on some totem poles, in the middle on others, and perhaps low on others. Figure 2 shows the first alphabetical subgroup

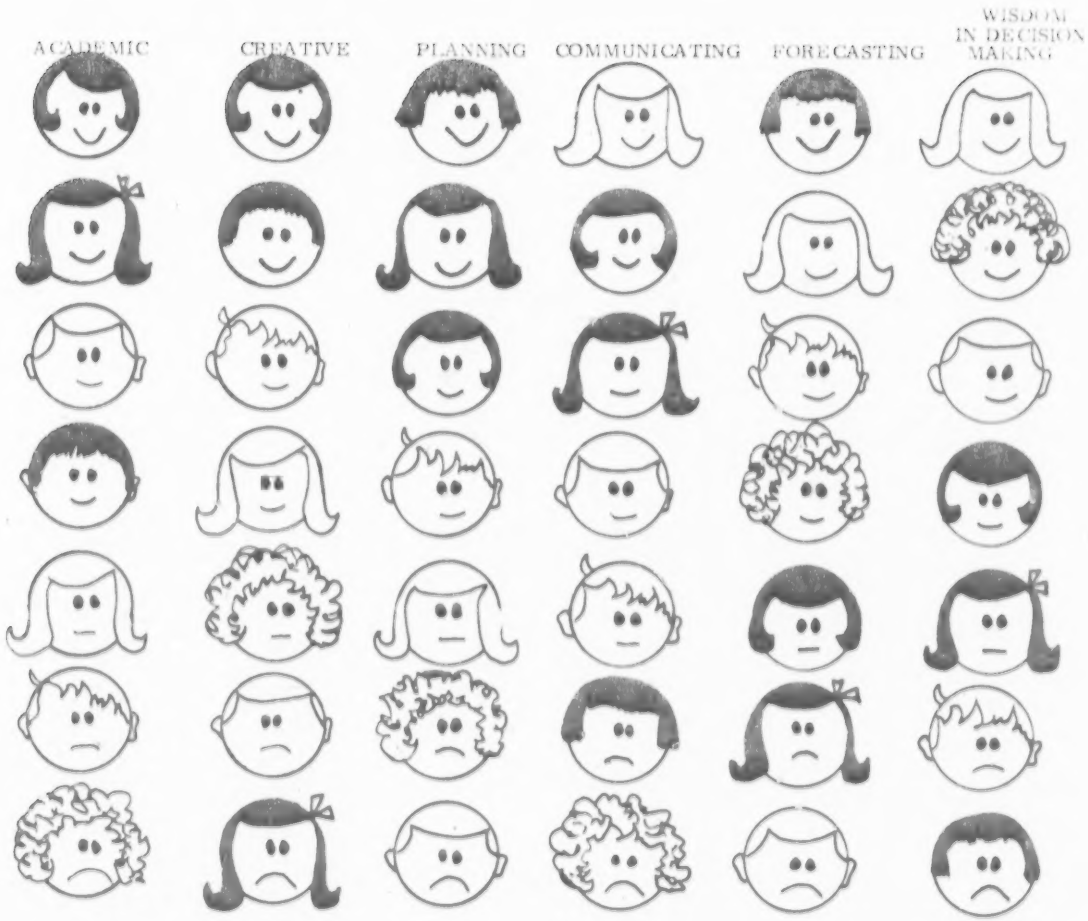

Fig. 2--Talent Totem Poles of seven students

of seven of her students; you will notice that the top two are very much alike in the first talent but very different in the second one. This is a striking and important example. Notice also that every time you try a new talent, there is a tendency for those previously high or low to move toward the middle of the next totem pole. Some at the bottom go up

and some at the top come down, which leaves room at both ends to be filled in by others. The curly-haired girl at the bottom of the left-most talent pole is not too promising until one tries her in at least five or six talents. It is great to finally discover that she is average or even above average in something, and is in fact quite promising. Her case illustrates nicely the generalization that almost all students will be above average in something. Furthermore, they will acquire more subject matter as a by-product of practicing their different talents than if we only have them use their academic talent. Individually, they will generally acquire knowledge at an above-average rate with their best talent, at about an average rate with talents where they are in the middle, and at a below-average rate in their lowest talent.

After someone commented that this talent totem pole model is too static, we built a more dynamic *Multiple Talent Wheel*. In this model, the teacher must learn to make the wheel spin so that different talent spokes are used, and thereby different talents in students are "turned on." As the teacher turns the talent wheel, different talents come into action and function, in turn, in students. The teacher is challenged to "be a wheel turner and move the world." The teacher is the one who "turns on" different talents in students in the classroom.

Very few of the recent so-called innovations in education have filtered down to where much if any difference occurs in students. In sharp contrast, this talent-developer approach does reach the students. The

teacher can turn the wheel around and thereby "turn a kid on." It's a "wheel of good fortune" for kids; as the wheel turns, the students take turns in being toward the top and toward the bottom. The slogan I like best is "A turn a day keeps the failures away."

This is therefore a program in which almost all students are "doomed" to succeed. That is, they are fated to have at least one real talent opportunity to succeed. And the program will give a fuller intellectual life to the physically handicapped because they will have a chance to develop many more of their intellectual possibilities. We, too, can find more intellectual activities in which the physically handicapped will not be handicapped--ways in which they can function well. It can give a richer life to everyone in the classroom and prepare him for a more rewarding career and a fuller life style.

Designing Architecturally for People

An experience with my students in a class on "designing for people" might further clarify my viewpoints and approaches. My requirement is that students produce a new idea of their own as a term paper--with no library search or patent search involved. Just their own new idea is to be presented in writing and in a three-minute oral report. One student began his presentation by saying that "the dictionary defines *alarm* as a state of emergency--and that is a heck of a way to wake up!" He had decided that whenever possible, people should awaken by their natural awakening processes. If they ever had to get up earlier than they would awaken naturally, he would design an environmental system that would let

them wake up as naturally as possible, rather than in an alarming state of emergency.

The preceding section described the attempt to design school programs, materials, and teaching procedures so that all of the natural talent processes of students will be allowed to function instead of being kept dormant or even stifled and distorted. In this section, we will focus on whether the architectural environment is well designed for the natural characteristics and activities of its users.

We have called this new area Architectural Psychology. It is a very young field, but it is a natural combination, since architects design environments for man and psychologists study the reactions of man to his environment. Unfortunately for mankind, however, this teamwork is not as yet very common, so the field is full of challenging questions and unknowns.

My first example does not deal with a purely architectural environment, but rather with the props within it. We held a research conference entitled "Instructional Media and Creativity,"(1) at which two of the greatest contributors were Jack Edling and Lester Beck, both from Oregon. We were all searching for ways to surround students with instructional media and thereby facilitate activating whatever processes the teacher is trying to "turn on" in students. At the conference, it was openly stated by the instructional media experts that nearly all of the existing instructional media and materials deal only with knowledge-dispensing equipment and procedures. There continues to be a lot of money spent on these procedures, but, they said, practically none of it

(and I do not think it has changed very much since) had been built with the purpose of activating the creativity, i.e., the creative processes, in students. So there are vast fields to conquer in designing and constructing instructional media as a part of an environment that will elicit creative, natural talents in students.

On the flight here, I noticed an example of a design that causes confusion, frustration, and discomfort in passengers. Practically all planes copy the design feature in buses of a large, space-consuming, overhead luggage rack. But the airplane passenger soon learns that his bus habit of putting his luggage in the overhead rack will bring him a reprimand from a stewardess. Instead, he must put his luggage under the seat in front of him, thereby losing most of the legroom designed so he could stretch his legs and shift his position during the flight.

The nation is awakening to a remarkable and great concern over various forms of pollution of man's natural environment. But it has not yet truly awakened to the problem of man's constructed (man-made) environments, which are often the single biggest expenditure per family or per organization. Certainly one of our greatest national expenditures is in the construction industry of buildings "for man." It is always assumed that buildings are built for man, but historically almost no one has ever systematically and scientifically checked buildings to see if they are, in fact, well designed for man. We find, however, that the public believes very strongly that they should be so checked out; invariably they ask "if not, why not." Since they have not been, the public should be better served in this respect.

In fact, psychologists have tended to avoid studying scientifically almost any complex, multivariable situation and stimuli, such as the total architectural environment. Similarly, an architect largely finishes his design work long before a building is ever completed and occupied. Consequently, he is three to four buildings down the line by the time his earlier designed building is occupied. Rarely is he paid to return to study it, nor does he tend to visit it to get any systematic feedback about the reactions of the occupants. One recent recipient of a doctorate in architectural psychology, who previously had fourteen years of architectural practice, said that it could be too painful to go back to see how well a building is performing for its occupants; and there is otherwise little positive incentive for him to do so. Instead, it is more natural and psychologically satisfying to keep working on the latest new building that he is now being paid to design.

The University of Utah has a new hospital, of which we are interviewing some key employees. They bombard us with all kinds of suggestions: "If the hospital had only been built this way. . . ." Many are ready to abandon it already, if they could, and design and build another one because of all the things that are not ideal for their work. It is sad that the hospital is not well designed, because of both its newness and its cost.

In the health fields, there is a book to which I contributed called *Therapy by Design.*(2) It is a clever title, for it suggests that we might be able to design building facilities to be facilitators of therapy, if we would just work soundly and effectively on this approach.

Perhaps the best example I have seen is a simple one in Southern California. This is a mental health center that has a well-designed car drive-in station. Anyone who is highly disturbed can be driven right up to the special landing outside the door. When the car is driven in closely to its proper location, it forms in effect an enclosed space. The door of the car can then be opened so that the disturbed person has only one way to go, i.e., out of the car, onto the landing area, and then through the hospital door immediately into a special room. No one can see the disturbed person except those in the car. He can then be treated in the room by a hospital specialist until he becomes undisturbed. Then he is ready to go among the other patients inside the hospital, without any stigma from his previously disturbed behavior, because no one there ever saw that he had been disturbed. Initially, there was no way out for him except to go into a special room for special help. A simple design like this can avoid many complications for all concerned and can help to speed up the recovery and total therapy program.

In a recent study, Roger Bailey, my architectural colleague, and one of our graduate students observed a mental health center (now being completed) and found that many patients soon learn who the key (power) figures are in that center. Whenever possible, these patients keep themselves within observational range of one or more of the key staff members, watching and hoping that they in turn are being watched. They apparently sense that their own "good or improved behavior" must be seen by a key person if they are to be released from the hospital setting. Probably no one ever had quite this behavioral phenomenon in mind when he designed mental hospitals, mental health centers, or psychiatric clinics.

There is strong emphasis nowadays in the health area on the delivery of health services. At this conference, you are talking about the delivery of special education services. Though I have been on the Special Education Committee of the United Cerebral Palsy Association (UCPA), I do not yet know very much about how architectural psychology can help. Nonetheless, let me suggest to you some of these needs in special education.

We have done a survey of physically handicapped cerebral palsy victims to see what they would like to have designed into a canyon camp being built by our local and state UCPA organization. It seemed wise to get ideas and suggestions of needs from those for whom the camp was to be designed, rather than merely to impose upon them the best-designed camp that the UCPA leaders and the architect could conceive.

Another consideration is architectural barriers. By means of these unintended and thoughtless barriers, many physically handicapped can be needlessly "designed out" of functioning in much of our man-made world. How many of you have ever sat and tried to function in a wheelchair? We want designers to sit in wheelchairs and move around in them in order to encounter the many architectural barriers that are built into our buildings. For instance, if you tried to come to this meeting in a wheelchair, how would you get down the steps into this basement room?

The University of Illinois has distinguished itself by enabling people in wheelchairs to move around and get to all classes, on their own and on time. A few years ago, they reported that about four hundred

of these students had finished their degrees, had all been placed, and were all working at very decent salaries. Instead of being "designed out," and thereby being a liability to themselves and to society, they had been "designed in," so that they are a real asset to the world.

We have a student nearing the completion of his doctorate who has been in a wheelchair since he broke his neck in a high school diving accident. It was a psychological and physical journey of several years for him before he got back into action in college. I have never seen a person so relieved and appreciative as when I phoned and found out for him that a building to be finished that summer would have a ramp and an elevator. He then knew that he could attend classes and take the courses in the major field of his choice in that new building. Previously, he had had three long flights of stairs to overcome if he wanted to take any courses in that department. We can and do design people out quite effectively.

I understand that once someone had a very tall man (like a basketball center) sit in a wheelchair and move around for a while. He felt very nervous, because this was the first time he had ever looked up at people instead of looking down at them. The unhandicapped would have different and even surprising experiences when put into the predicaments of the handicapped; and until architects do so, they can have very little understanding and can make bad, lasting mistakes in designing buildings and their internal facilities.

Theoretically, buildings are meant to be "tools for man." One should design them to fit and to serve man, rather than expecting man to

fit and adjust to the buildings. (I will preface my later remarks, too, by saying that organizations are likewise supposed to be tools for man. The organization should be made for man, rather than man being made for the organization.) One of our problems is, How effectively do these "tools for man" really function for man? As a member of the National Academy of Sciences advisory panel to a building research organization that has been doing building research for sixty years, I asked them how many behavioral scientists they had had on this committee before me. The answer was, "None." So I was the first; and at times I think they already wish I were not on it. But their expenditures have been typical--almost 99 percent of their R&D efforts on physical things and 1 percent or less on the human being side of buildings. This is strong evidence that the *direct* focus has *not* been on buildings as well-designed tools for man. If they could only double their efforts--and there is recent evidence that they are starting to--the 99 percent would just be reduced to 98 percent. But what an effect it could have by doubling the attention to the human side!

The panel has a chart for measuring the "performance of buildings"; now they are starting to measure the performance of housing units for the Department of Housing and Urban Development (HUD). After examining this chart with all its marvelous physical science measures, I saw that there were no comparable measures for the human side of buildings. I asked, "But shouldn't man be the main measure? Shouldn't man be the ultimate measure of how well the buildings perform?" The answer is obviously Yes. But, as obviously, no one has yet developed the ability to

measure building performance in terms of man, so they continue to do what they know how to do and spend their money on physical science measures. However, they are starting to move in the other direction. This is a great awakening of which I am pleased to be a part (and one of my doctoral students has just joined their staff since I gave this presentation). Their progress might be rapid and great in the next few years. We should all hope so.

In this, as in the other problem areas of this paper, someone has said, "We have discovered and encountered the enemy--and it is us!" It is really the present establishment that is the problem: we are so established in the traditional ways, in spite of their shortcomings. Six or seven design professions have organized together in the Interprofessional Council on Environmental Design (ICED) and are awakening to the need for having behavioral scientists work with them in their design efforts. This is a timely and wholesome interprofessional linkage and growth trend. These design professions are trying to heal themselves by inviting representatives of the behavioral science professional organizations to join them. In turn, we are trying to learn how to work closely with planners, architects, engineering designers, and managers in design companies so that what has been learned by behavioral science researchers on building and environmental design will influence all stages of the design process and thereby affect the final structure.

In our locality we have also been helping in the planning and designing of a state park by our enlightened state park director. To show you our belief in the above approach, we dropped a hint about this

project to an elementary school with which we are working on multiple talents. "How about having your students help us in this project by using their planning talents?" In no time they had a full bus load of their students in that state park, in the natural desert island setting. The students roamed the park and then came back and gave us all kinds of ideas and advice that adults might not have given. We do *not* deprive them of doing these things. They helped figure out ways to develop the state park so that it will also be well designed for young people. This is much better than just having a few adults doing all the planning and then imposing their thinking on others who were not invited to participate and who had no representation.

We have also had young students (even in the second grade) work on the population explosion problem; the results have been fascinating. I recently participated as a special commenter in a national conference on this topic. The kids immediately abandoned the main approach and assumptions of adult research. Then they took other approaches which, in certain ways, are better for solving these problems than those used by adults who are already locked in on *the* way to go about it. But the youth go at it in ways that adults do not; moreover, they supplement the adult approaches, which is fortunate. We also learned not to let adults interfere or they might stop this good work of the youth--this we discovered when one "turned-on" class was asked to talk a problem over that night with their parents. The next day it was found that they had been "turned off" very effectively at home. They had been told authoritatively either that there was no problem or that it was *not yet* their problem!

We have also had young students work on antipollution problems. Once again, they are very ready to tackle this problem whenever we show the wisdom to use them as important resources for new ideas and plans, making decisions, solving problems in new ways. I will give you one of their ideas so you as adults can note how quickly you tend to react negatively and attempt to dismiss their ideas as "no good." One way to solve the air pollution problem, they said, is to write a rule that all chimneys have to be capped and remain capped until what comes out is clean air. Meanwhile, the polluted air has to be kept inside by capping it in, which keeps the problem where it started instead of dumping it onto society. Isn't that interesting? How would you like to work in some of the factories when they put a cap on the chimney? Then the factory really knows it has the responsibility of the problem.

Youngsters can be asked how they like the design of their classroom and to think of the ways this classroom could be improved. They will immediately start thinking and producing and will have a great experience. Their ideas and suggestions will invariably be stimulating and revealing.

Perhaps you should present them with your responsibilities and problems in special education and receive all the fresh thinking and unexpected help you might get from them. You could get all this help free because there are millions of students in classrooms. However, they are generally not productive in class because the system tells them that they are not supposed to produce until they are through high school or college. Up to that time, they are only supposed to be learners and have great awe

for what has already been done by adults; so they are being molded in an "awe-ful" way. This stops them from being productive in school, even though they are quite ready to join in working on the problems of today and tomorrow and in generating ideas, plans, designs, suggestions, and revisions from the potential mindpower of their millions.

Recently George Trieschmann(3) completed a dissertation under my supervision on open vs. closed plan schools--the large open rooms without walls as against the typical eggcarton design. It soon became obvious that the open-plan school allows much greater flexibility and a lot more movement. Students can float around, drop out of class, and drop back in. People can come and observe without shattering a class, as happens in a closed room, by opening the door and noisily walking in and out on the hard floor covering.

There are some sound problems in the open-plan class that are different from what we expected. One problem is that students cannot hear, rather than that there is too much noise, especially after carpeting is installed and without walls to reflect the sound. Therefore, students tend to move in closer so that they can hear the teacher. In doing so, they often abandon the chairs and sit on the carpet around the teacher. Then the teacher, too, may abandon her chair, so they all sit on the carpeted floor. The class becomes more relaxed and informal, drawing closer together and closer to its teacher. Thus, the unexpected feature of open-plan design is the improved communication and closeness between teacher and students.

Another dissertation this year by Blair McDonald[4] of our group investigated the complexity of organizational climates. McDonald studied the relations between different dimensions of the climate and the productivity and effectiveness of people working in it. A related dissertation by Eugene Secrist now in progress in our laboratory analyzes how much each aspect of the life history, each dimension of the present organizational climate, and each feature of the present architectural environment contribute to the productivity and effectiveness of the workers in each of several organizational settings. These basic studies on the effects of environments should provide valuable clues as to how we could create organizations and architectural facilities that are better designed for people to function effectively and fruitfully.

Designing Organizationally for People

One of the greatest challenges in the world is to design organizations and organizational climates that truly encourage people to function with full effectiveness and thereby live up to their potentials. We have a book nearly published entitled *Climate for Creativity*.[5] Primarily, this book refers to organizational climates. The research answer to date is that we need to search for a climate for creativity; almost everything we have seen and studied in organizations is not it.

In counseling psychology, we are toying with the idea of not only assessing the potentialities of a person and helping him find a suitable career, but also, once he has decided upon his career, to help in his crucial decision of what organization to join in order to have that career unfold most effectively. Someone could have great potential for a

career, but if he goes into, say, organization *A* and stays there, he might stifle his whole career. Instead, if he goes into, say, organization *B*, he might do nothing but grow and flourish his entire life. So we want counselors to be able to understand this and to have techniques for their students to use both in choosing a career and in choosing an organization for fulfilling that career.

After putting the last touches on *Climate for Creativity*, I am ready to write another article or book called *The Perils of the Creative Subordinate*. I am confident that there will be a lot of empathy for this next one, it being a stimulating topic. Almost everyone feels like a creative subordinate and has experienced many of the things described (such as the twelve golden rules on how to kill creativity), but no one admits that he has done any of these things to anyone else. Yet from our own research findings and from those of others, I was led to write an article, after a West Point leadership conference, entitled "Needed: Leaders Who Facilitate Creativity"; we apparently have only a precious few of such men.

I have said that organizations are at their absolute best on very routine matters, but often at their absolute worst on highly creative, important matters. How to troubleshoot the malfunctioning organizational and leader behaviors when creativity arises is the subject of another prospective article of mine. But who is there to do this troubleshooting in each organization?

I have sketched a chart about incentive systems. It suggests that you can get anger and pain from the organization, or the organization

can be happy with you. If you are not very fruitful, you are likely to suffer a little pain from the organization's mild anger. Therefore you have to produce a little more to get out of trouble and hang onto your job--but most people can do this. Then if you become more fruitful, you are more and more rewarded. However, you may soon find that beyond some point you start doing too much--and then the rewards start to diminish. If you then work harder and do even more, you start getting into painful-reward territory again. If you keep trying harder and producing more, the organization makes things more and more painful for you, so that eventually you and the organization have to part company. How can an organization be designed to function so that when a highly fruitful person works for it, the organization can stand such fruitfulness and not merely tolerate but positively reward every increase in fruitfulness (as is described in the Parable of the Talents).

Most companies have a triangular-shaped organizational chart, with several levels within the triangle. It is obvious from this shape that there is not room for everyone at the top. The greatest creative potential in any organization is likely to be where the greatest number of minds are, which is usually at the bottom level. So in our educational system, the greatest creative potential is in the total group of teachers. However, if you include the vast group of students as part of the organization, then it is obvious that the greatest total potential creative mindpower lies with them.

If you can teach teachers to function effectively as catalysts for creativity in their students, so they spark creativity in their students,

we will admire you greatly. In fact, if you are doing it, you will be such a rare bird that we will want to come and study you and the teachers that you produce.

How to Kill Creativity--Twelve Golden Rules

Let me finish by listing Twelve Golden Rules reflecting what we know about climate for creativity. Unfortunately, what we know is that we do not have climates ideal for creativity. So these rules show what we have learned by studying existing organizations, which is how to kill creativity.

1. Assume there is only one intelligence or academic type of talent, only one type of giftedness (and thereby do not let any creative talents function--schools have been good at this).
2. As supervisors or teachers, ignore scientific research results about creative talents.
3. Teach the best and shoot the rest!
4. Keep doing what was done to your ideas--and even do it more so.
5. Be very human--react quickly and negatively to new ideas.
6. If you don't understand it, oppose it.
7. Keep the rule going: "The more highly creative the idea, the more likely it will be in trouble."
8. Fail to try opportunities--which is better than to try opportunities and maybe fail.
9. Organize creatives in (under your controls)--or organize them out, i.e., ostracize them.
10. Design all possible features into an organization that stifle or kill creativity.
11. Have a deadly negative incentive system for creative persons and ideas.

12. Jealously guard and keep the prerogative only to yourself to plan, to think, and to create. In other words, reserve the right to be the only talented person around and don't let anyone else display any of their talents--at least, not to any noticeable or threatening degree.

* * *

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PRECISION TEACHING: A SYSTEM FOR CLASSROOM EVALUATION

Thomas C. Lovitt*

That some type of measurement is necessary in education is becoming more and more obvious. For, unless teachers measure what they profess to teach, they will never know what they have taught to whom. Furchermore, unless administrators receive such data from their teachers, they will be unable to evaluate them accurately.

Apart from these fundamental reasons for measurement, data are being demanded more and more by the public. Today is the "age of accountability." No longer can schools pass levies without a major effort. People want to know what their monies are buying. They want to know whether the schools being built are functional and if the high teachers' salaries given have an impact on the development of children.

The government is beginning to take a closer look at education and the expenditures they allocate to education. One example is the government's concern over the Head Start program. The government asked the Westinghouse Corporation and the University of Ohio to evaluate these efforts. The subsequent evaluation seemed to indicate that many Head Start programs had little effect on preschool-age children.

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A few years ago, there would not have been evaluations of such programs. In the early sixties, money was more abundant; a simple request for money was enough to receive a grant. The educational enterprise would not have been asked to substantiate its progress to any great extent.

Today, whether we advocate measurement or not is academic, because more and more evaluations *will* occur. That the involvement of measurement is on the increase is not disturbing; the concern is for the *type* of measurement that can be recommended. Ordinarily, educational measurement has consisted of the administration of an intelligence test, aptitude test, or achievement test. This type of measurement could be characterized as being *indirect*, *infrequent*, and *expensive*.

These tests are often only indirectly related to the behavior that is to be measured. If, for example, shoe-tying or table manners are the behaviors to be investigated, a Social Adjustment Scale is sometimes scheduled. Or, if descriptive language is the behavior to be measured, a standardized language test is occasionally arranged. If reading or math are the behaviors of concern, an achievement test may be given. When certain standardized tests are administered, it is often assumed that the behavior being taught is the same as that being measured. Obviously, this could be an erroneous belief.

Furthermore, when standardized tests are used to assess behavior, they are infrequently administered. Achievement tests, for example, are given once or twice a year. Two intelligence tests could be given in six years. Compared to this, cooks, bartenders, and sportsmen mea-

sure more often. More measurement is used to bake salmon, mix martinis, and play golf than to educate children.

This type of measurement is also expensive, because, in order to administer many intelligence or achievement tests, the administrator must take special courses. Generally, graduate courses concerned with the administration of the WISC, Stanford-Binet, or other psychometric instruments are provided.

The principles of precision teaching offer an alternative approach to measurement--measurement that is *direct*, *frequent*, and *inexpensive*. Direct, in that the first dictum of precision teaching is to "say it like it is." If the behavior of concern is naming letters, blends, or nouns, these behaviors should be measured. There would be no need for an achievement or aptitude test.

Precision teaching advocates recommend that frequent measures of behavior be obtained. Performance sometimes varies over a period of time; therefore, any single measure may not provide an accurate description of someone's behavior. Important educational decisions, such as whether to skip a child a grade or to place him in a special education class, should not be based on a single assessment of behavior.

Precision teaching techniques are inexpensive. Teachers can measure performance without costly materials or extra courses. They need only a pencil, paper, and a few basic notions about observing and charting. Indeed, children, even professors, can use precision teaching techniques to measure behavior.

Once a behavior has been defined, it must be counted each day for a period of time. If, for example, the teacher is recording the times

a child hits another child from 9:00 to 10:00, he would make a mark each time the child hit someone, then divide the total by 60. This figure would be the rate of the child's hits per minute. This rate is then plotted on chart paper. When academic behaviors are assessed, two daily rates are obtained, one pertaining to correct answers and one to errors.

This form of direct, frequent, and inexpensive measurement furnishes the teacher with vital information about his class--the way he and his students interact, whether he is or is not successful. Although there are numerous ways in which these data assist teachers to explain events in their classes, five examples only will be discussed.

One function of measurement is that the teacher can learn about himself. Such an example is a project conducted by a sixth-grade teacher. Her concern was the number of times she related to her pupils; she wanted to know the number of times each day she interacted with them regarding nonschool topics. A nonschool topic was, for example, a discussion with a boy regarding his last week's fishing trip, or a talk with a girl about her plans for the coming weekend.

During the first phase of this project, the teacher simply measured the extent to which she interacted with pupils; no attempt was made to alter the rate at which this behavior occurred. She measured the behavior the total school day--250 minutes. (The length of the observation period is noted on the chart by the *record floor*, the broken line that extends from the rate .004. The record floor is determined by dividing one by the length of the session. In this case 1 ÷ 250 = .004.) One interaction was tallied each time she talked with a different pupil. If she talked with one pupil, then talked with him again, only one tally

would be made. Throughout this phase, her median rate of interacting was .036, or about nine engagements per day--250 x .036 = 9 (see Fig. 1).

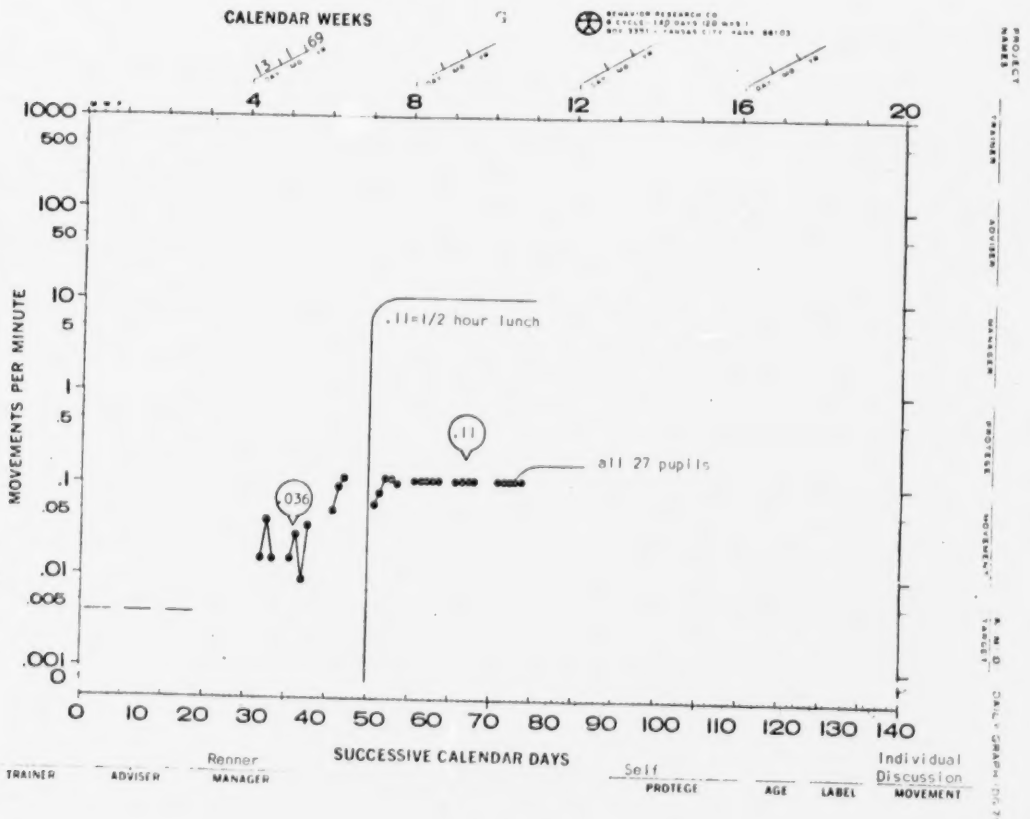

Fig. 1--Measurement of teacher interaction with pupils

Throughout the second phase, a contingency was arranged. This contingency specified that if her interacting rate was above .11, then the next day she would be allowed a full half-hour lunch period. Otherwise, she would have to eat in 15 minutes, leave the lunchroom, and return to her classroom. This rate of .11 was based on the total membership of her class; if she contacted all 27 members of her class in a day, the

rate would be .11 (27 ÷ 250 = .11). The data from this second phase indicate that on 16 days she was successful--all 27 members of her class were contacted at least once. The median interaction rate during this second phase was .11.

Other teacher behaviors that could be assessed would be the frequency that reprimands or compliments are dispensed or the number of pages or problems that are assigned each day. Teachers could also measure one of their behaviors, such as giving praise, along with a pupil behavior, such as oral reading. By manipulating the teacher's behavior, the instructor could determine whether that behavior influenced the pupil's performance.

A second way in which data may be used is to evaluate various instructional techniques and procedures. In one project, the purpose was to determine the effect of verbalizing math problems prior to making a written response. This experiment was composed of three phases.

During the first phase, the pupil was assigned 20 math problems of the type $\square - 2 = 6$. He was simply instructed to write down his answers. After the session he was thanked and sent back to his class; no additional feedback or consequence was provided.

Throughout the second phase of the study, the boy was again given a sheet of 20 problems daily of the same class as before. Now, however, he was asked to verbalize the problem and the answer prior to writing his answer. Following this phase, the conditions were arranged as they had been in the first phase. The pupil again simply wrote down his answer; he was not required to verbalize the problem.

The results of this project indicated that during the first phase, the pupil's median correct rate was 3.5 responses per minute, while his median error rate was 18.0 per minute. Throughout the second phase, when he verbalized the problem prior to answering it, his median correct rate was 9.0 and his median error rate was 2.5. In the final phase, when verbalization was no longer required, his median correct rate rose to 18.0 answers per minute, and his error rate fell to .5 responses per minute (see Fig. 2).

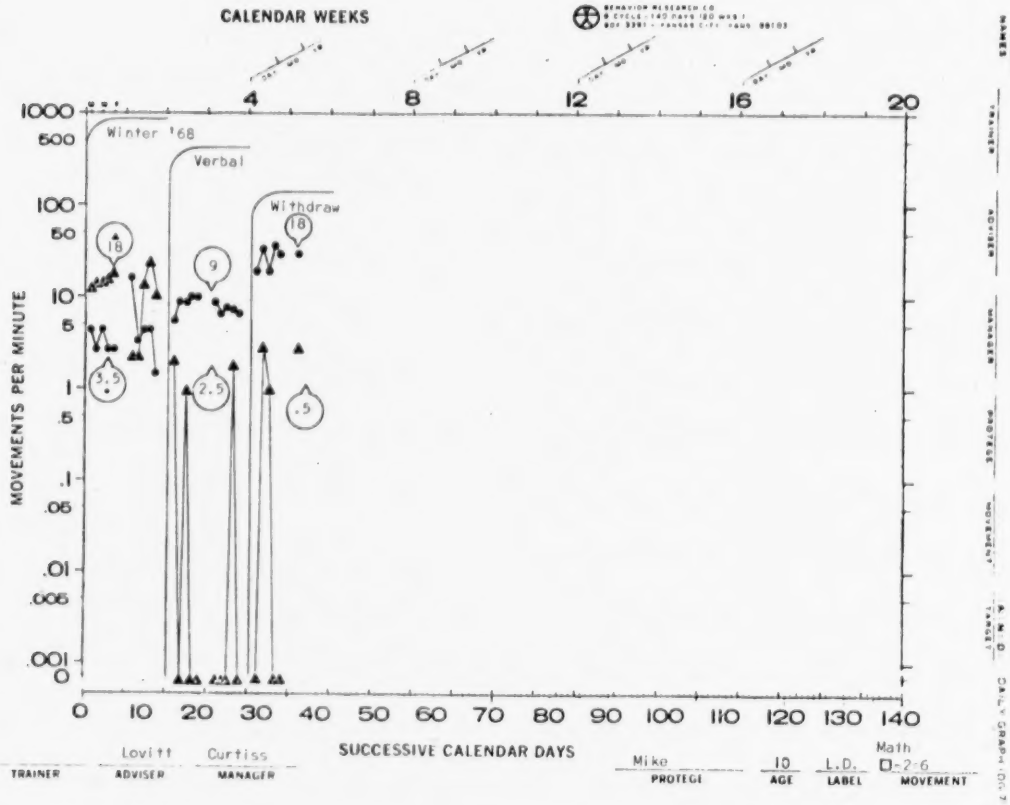

Fig. 2--Three-phase experiment on the effect of verbalizing math problems before making a written response

A three-phase experiment such as the above could be used to evaluate a number of teaching aids. During the first phase, performance could be measured without an aid or instructional device; then, throughout the second phase, the aid would be scheduled. Finally, if the pupil's performance improved in the second phase, a third phase would be scheduled to determine if the improved performance would maintain itself once the aid was withdrawn. Using such a three-phase design, instructional aids such as the number line, abacus, and color cues could be evaluated.

A third way in which data can serve the teacher is to determine the effects of some contingency or rule on pupil performance. Teachers often arrange such relationships as, "If your work is finished, then you can go out for recess." The effects of such contingencies are, however, rarely measured.

A project illustrating how an arranged or contingent event can be evaluated dealt with a boy's saying nasty words. During the first phase of the project, the teacher simply recorded the rate at which this behavior occurred. She counted each nasty word episode throughout the entire school day--330 minutes. The data revealed that the rate at which these utterances occurred ranged from .0 to .03 (10 per day).

The teacher had observed during the first phase that the subject often asked his friend, Curtis, whether he liked him or not. Curtis was very matter-of-fact; if the subject was "good," he reported that; if "bad," that also was revealed. The teacher made use of this information throughout the modification phase of the project. She consulted Curtis and told him that each time the subject uttered one of his sayings,

Curtis was to go to him, tell him he did not like to be near him when he said "_____," and leave. Curtis was also told that if, after a period, the subject came to him and spoke of something "socially acceptable," he was to return to his seat behind the subject.

The data throughout the modification phase indicated that Curtis's withdrawing, contingent on a nasty comment, was a successful arrangement. On some days only one occurrence of the nasty talk was recorded (.003), and on most days no infractions were recorded. Only on one day, during the modification period, was the rate as high as .008 (three incidents). On that day, the subject was provoked by a new classmate (see Fig. 3).

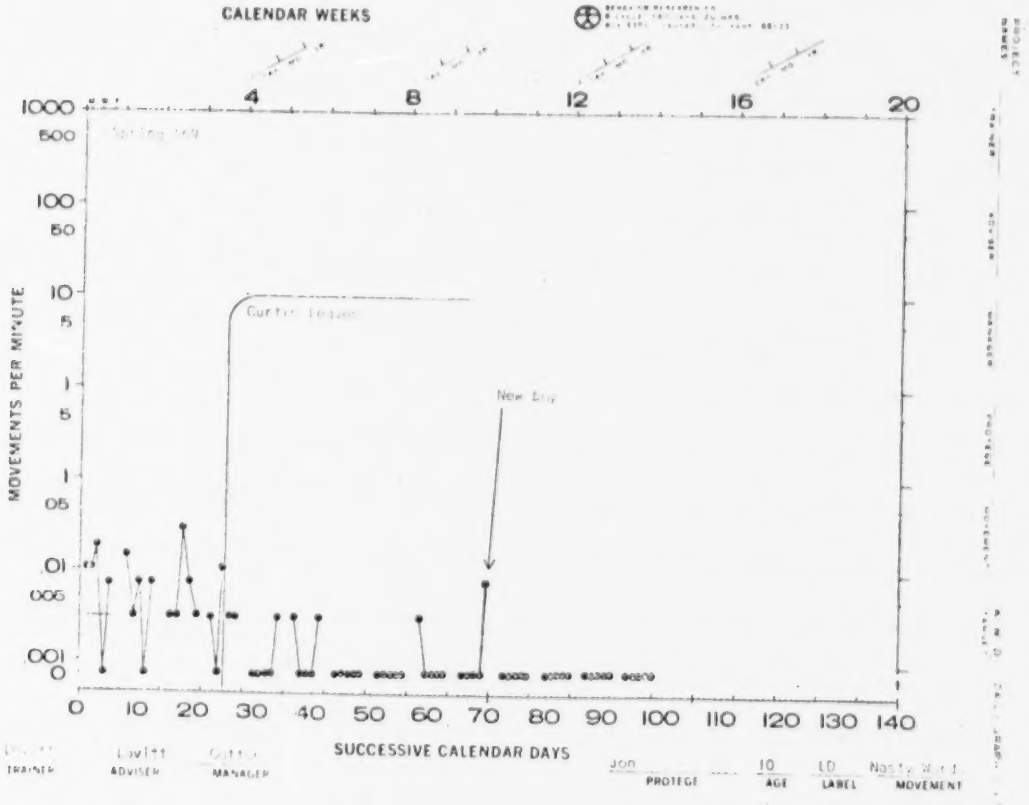

Fig. 3--Effect of a contingent event on pupil behavior

By using a similar design, a number of consequences arranged by school personnel could be evaluated. By scheduling first a phase without the contingency, then one where a consequence is arranged, the effectiveness of contingent praise, tokens, or leisure time could be evaluated.

A fourth way in which measurement may serve school personnel is to facilitate communication between the teacher and the administration. Often principals or directors of special education are more concerned with overall group performance than with the behavior of specific pupils. In the example project, correct rate ranges and medians and error rate ranges and medians are provided for a group of nine children in a remedial reading class. These data represent the pupils' performance from the programed Sullivan reading series (see Fig. 4).

In the first phase, the children were in a remedial reading class. While in this class they were taught a number of self-management skills, such as how to correct their answers, count the number of correct and error responses, calculate the amount of time they were engaged in the program, calculate correct and error rate, plot these rates, and evaluate their daily performances. Then, in the second phase of the project, they were returned to their regular classrooms. While in their classrooms they continued to work in the Sullivan program, employing many of the self-management procedures learned in the remedial classroom. In the third phase, the remedial class was used as a contingency. If a pupil's correct and error rates for a given day met certain specifications, he could go back to the remedial class and play with various toys or games.

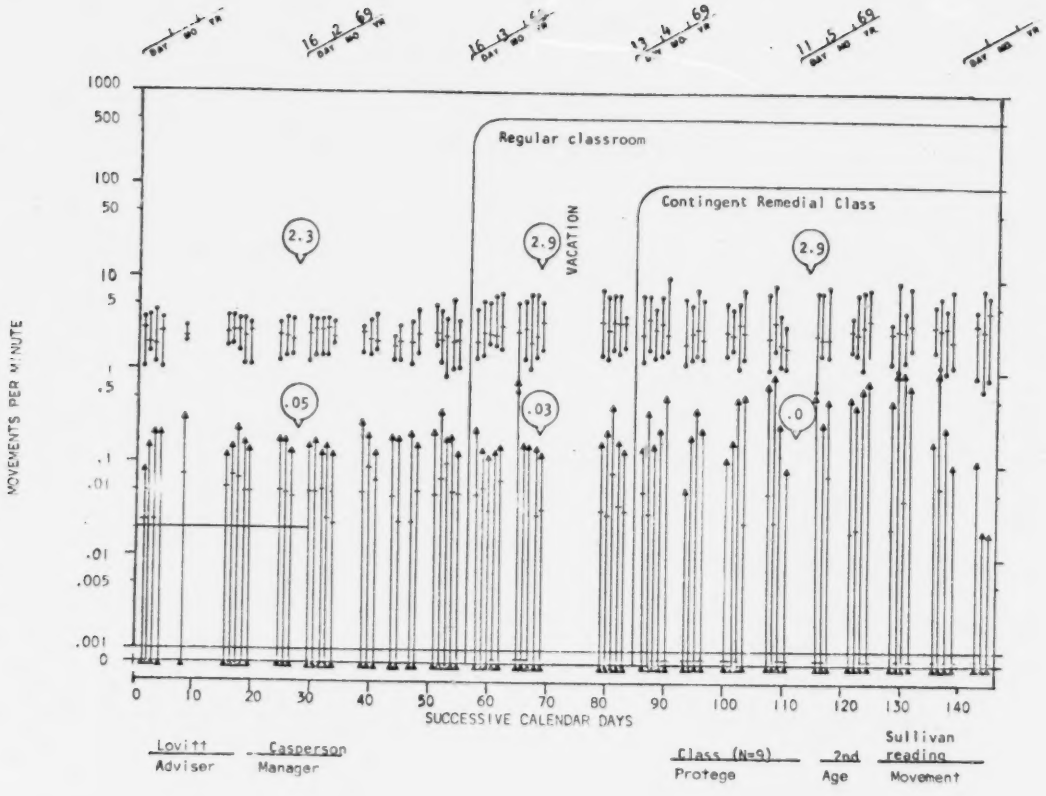

Fig. 4--Pupil performance from Sullivan reading series

Although no individual performance is reflected in these charts, such group data provide the principal or the special education director with the general trend of a class. Group decisions, then, can be made on the basis of these data, such as whether to enroll another child in the class or whether to provide the teacher with an aide or special equipment.

Another way that data may serve the teacher is to assist him to communicate with parents. Confrontations with parents, particularly parents of exceptional children, can be traumatic. Often, there are

few positive comments the teacher can make about a child in special education. Many parents have heard such comments as their child hits too much or does not read enough all too often. However, if direct and continuous measurements are kept, steady progress over a period of time can be seen; furthermore, the measurements are less prone to elicit subjective or emotional responses from either the teacher or the parent.

The form shown here is a portion of the communication system that we use at the Curriculum Research Classroom of the Experimental Education Unit to communicate with parents (see Fig. 5). Although numerous interviews with parents precede sending out such a chart, the form shown here is one that is sent home each week. The summary sheet simply indicates the correct and error rate for each program the child is working on.

Your child's progress for the past week is summarized below. Please come in to the classroom at any time if you would like to see what your child is working on and charts of his daily performance.

	Correct Rate	Error Rate
Oral Reading		
Phonics		
Spelling		
Addition		
Subtraction		

New Programs:

Comments:

Fig. 5--Pupil progress summary sheet for parents

The special education director or principal can play an extremely important part in maintaining such a measurement system. One way to promote measurement would be to request that data be kept. Some principals, when presenting the notion of measurement to their teachers, offer it in the same way they would describe a new phonics method or a new way to teach language. It is often presented as another technique, another gimmick. When teachers hear this kind of a presentation, many say, "Well, measurement is the thing this year. It was Words-in-Color last year; I wonder what it'll be next year." It is very doubtful that many teachers, if the presentation is of this type, will actually take up the challenge, get out their pencils and charts, and begin measuring. None of us is any more precise than we have to be; therefore, measurement should be presented as a necessity, not as an option. To a great extent, teachers should be allowed to teach what they want, the way they believe it should be taught. They should, however, be required to measure that which they profess to teach.

A second way a principal or special education director could maintain a measurement system would be to reinforce teachers for measuring. Often, principals seem to reinforce teachers for quiet rooms, attractive bulletin boards, and detailed lesson plans. Teachers and teaching would improve were administrators to, instead, reinforce teachers for using measurement.

The final and most important way that an administrator could maintain such a system would be to use measurement himself. Principals, for example, could measure teacher, pupil, or parent contacts, interactions

with ancillary personnel, and calls to the central office. Most educational suggestions, if made by administrators or the lay public, often directly involve classroom teachers. Whatever the suggestion, in the final analysis its implementation is generally up to the teacher. This is certainly the case when measurement is concerned. The teacher should not be the only one to measure, however, because principals, directors of pupil personnel, parents, professors, and everyone concerned with the school process should measure.

The alternatives to an educational system based on measurement are obvious. Without measurement, educators are at the mercy of Rickovers, Raffertys, Bettelheims, and their kind. Without continuous and direct measurement, educational change will continue to be based on folklore, whim, and speculation.

RELATIONSHIP BETWEEN PUBLIC AND PRIVATE SERVICE AGENCIES

Jack W. Birch*

Three new accountability processes are emerging, to my knowledge. You may be aware of others. If so, I hope they can be described in later discussion.

The one that is being talked about most is called performance contracting. Almost everyone has heard about the Texarkana contract with the U.S. Office of Education and the private firm, Dorsett Educational Systems. The objective of the contracted performance is to prevent dropouts in local school systems by increasing the school achievement of academically retarded pupils.

The first test results on Texarkana's guaranteed performance project showed achievement gains for the students and profits for Dorsett. The results from the standardized tests administered after 60 of the 80 hours of prescribed instruction confirmed evidence of the earlier spot-check. Students had gained 2.2 grade levels in reading and 1.4 in mathematics. The dropout rate for the program has been low. Starting with 400 students, only four youngsters had left the contracted program compared to 75 in a control group.

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Meanwhile, Dorsett entered into another guaranteed performance contract with Texarkana's Model Cities program. That firm is supplying basic adult education to more than 100 actual dropouts. Dorsett will be paid $200 for each student who passes a general education high school equivalency test the first time around. They will be paid nothing if students do not pass, and something less than the maximum if they pass the second time around.

Dorsett uses leisure and tangible prizes like transistor radios as incentives. Teachers who do well may opt to get company stock. The company relies heavily on audio-visual teaching machines.

Another and perhaps more comprehensive test of accountability, or payment on the basis of performance for delivering instruction, is in the making right now in San Diego, California. The school board has signed a contract with McGraw-Hill's Educational Development laboratory to improve language skills and reading levels for some 9660 minority children. The contract with the educational development laboratory is for 1.4 million dollars; it calls for instructional materials, inservice teacher training, and consultation.

As another example, the state of Virginia has planned to fund contracts with private firms along the line of the Texarkana accountability project to raise educational levels of disadvantaged children, chiefly black children. The contract would be let by the State Board of Education, and contracts would be signed with firms guaranteeing to upgrade achievement for specific time spans upon penalty of foregoing payment. Underlying the Virginia plan seems to be concern with the flow of whites from public to private schools. White parents are claiming that the

influx of black pupils with low achievement has lowered the quality of public schools. The state of Virginia is seeking federal funding, at least in the beginning stages of this contract.

Performance contracts have reached the college level, too. Twelve faculty members at John Tyler Community College in Chester, West Virginia, have signed performance agreements specifying that their teaching will produce specific, measurable results in their students. Each of the teachers agreed that he would be able to produce evidence that the students in his class could master the objectives of the course. The twelve teachers are members of the Humanities Department; and only those faculty members in the department who participate in the program will be eligible for special salary increments.

A second accountability process is the voucher plan. Although the system was designed primarily for elementary school children, it could be adapted to any school program, including all kinds of special education programs. The voucher system could operate on a sliding scale, with low-income students receiving vouchers worth considerably more than middle- or high-income students. This would act as an incentive for schools to enroll more low-income students, because they get paid more for them.

In order to qualify as a voucher institution, the school would be required first to charge no tuition other than the voucher; second, to admit all who apply as long as space is available; third, to operate without discrimination by race or other factors; and fourth, the school would be required to disclose a wide variety of information about school operations to the voucher agency and to the public. Some kind of local agency,

perhaps the school board, would receive the funds from federal or state government and issue the vouchers.

Under another modification of the voucher system, everyone would receive vouchers worth the same amount of money--a free market system. In either case, parents would be given a wide choice of schools, but schools would have relatively small choice as to the pupils they took. Under a voucher system, parents who did not like the practices in one school system could simply withdraw their children and enroll them in another school more suited to their particular educational philosophy.

The Catholic parochial schools are interested in a voucher approach, too. A National Catholic Education Association report released to the press just at the time of their state convention in May showed that twenty-three states have some form of law for state aid to parochial schools, and twenty-five have legislation either before the legislature or being considered for future introduction. Major victories were scored for state support of Catholic education in Connecticut, Ohio, and Rhode Island in 1969. Proposed laws are mostly for the purchase of services or for a tuition voucher system.

Pennsylvania's Governor Shafer has signed legislation allocating 14 percent of that state's 18 percent sales tax on cigarettes for purchase of educational service from nonpublic schools. Pennsylvania is currently providing 4.8 million dollars to purchase service from nonpublic schools. They money will be used to pay teachers' salaries, for texts, and for other materials of instruction. Pennsylvania's law is now before the U.S. Supreme Court for a constitutionality test.

This purchase of service from parochial schools, like many other schemes involving payment of cost for children attending private schools, really involves only a rudimentary kind of accountability. It is much less sophisticated than the performance contract approach; the same can be said for any voucher scheme proposed so far.

The third accountability process being discussed is based on a concept called educational auditing. This plan calls for assigning an educational expert or auditor to analyze a given program as it is going on. The audit is tailored to the program. The focus is on being sure that the program's objectives are defined operationally and in measurable form. The auditor then maintains a continuing surveillance on the output of the project in relation to its costs and objectives. This approach has not yet really been applied, but some talk has gone on about it in a number of professional organizations and in the U.S. Office of Education. It would be in a sense a projection, or a redefinition and extension, of the project monitor pattern now operative in the Office of Education, though on a much more substantial scale. It would be much more intensive and much more structured than the project monitor pattern.

Don Davies has said that "accountability will soon replace relevance as the *in* word amongst educators. I hope this is a reliable tip for two reasons. First, along with most people, I am stuffed to the eyeballs with relevance, irrelevance, semirelevance and pseudorelevance for people, programs, projects, and promises. Second, and more important, accountability, I hope, will be more than an *in* word, more than just a current fashion in semantics. I hope it will be an operative concept, a concept that comes to grips with a notion that too many schoolmen have

too long rejected; namely, the notion that schools and colleges should shoulder the responsibility for the learning successes or failures of their students. This concept of accountability calls for a revamping of some of our thinking about the roles of educational personnel in educational institutions at all levels. It links student performance with teacher performance; it implies precise educational goals. It forecasts the measurement of achievement. It means, in effect, that schools and colleges will be judged by how they perform, not by what they promise. It means shifting primary learning responsibility from the student to the schools."

According to Davies, "the word accountability can be interpreted in several ways. For instance, there is such a thing as accountability to taxpapers; there is such a thing as accountability to the Congress and the state and local legislative bodies. I have no objection to making the schools accountable to taxpayers or legislators, but I am talking about another type of accountability, the kind that holds teachers, aides, principals, superintendents, and school board members accountable for the educational achievements of all of their clients: those who come to school well prepared to internalize its benefits and those who have nothing in their backgrounds that would equip them for a successful learning experience. We are moving, moving toward making teacher training institutions and local school districts accountable to the community for the quality of educational services delivered and making teachers accountable for what children learn."

This, I submit, has some relationship to what American education is all about. The topics in the program seemed to me to focus too

much on where services come from, either public or private agencies. It would be easier if that were really the only concern. It would be a lot easier if that were even the main concern, but that dimension is far from the only one.

There are many agencies that are not easily classified as public or private; and it is getting more and more difficult to distinguish among them. For instance, the federally supported educational laboratories now join in partnership with major publishing companies and can share in the royalties of sales of instructional materials. When this occurs, the line between public and private agencies has become very, very fuzzy.

We are only now beginning to see the entrance of the private sector into the education of handicapped and normal children. The encouragement of such moves can come from the U.S. Congress. Let me call your attention to comprehensive federal legislation now pending on something that is going to be very important to all of you as well as all general educators: that is what is being called "early childhood services." There are a number of House versions; but House Resolution 16265, which is sponsored by Representative Gerald Ford, a Republican from the state of Michigan and the House minority leader, seems to have major backing for its passage.

Its sponsors suggest that this legislation will spur the development of a comprehensive network of early childhood services to meet the national needs. The legislation seeks to strengthen the new Office of Child Development. It would consolidate all early childhood education

programs into this new federal agency, the Office of Child Development. Robert Mitchell, who is a Republican Representative from Illinois, recently stated on the House floor that the eventual annual cost of such child development services would reach $22 billion by 1975. Mitchell has called for federal help in pump-priming such services by the private sector. A concept underlying the whole approach is that all parents would pay as much as they are able of the costs of services used by their children. The sliding fee scale proposed in the bill assures this. It would also mean that the overwhelming proportion of federal funds will be used to enable economically disadvantaged children to participate in early childhood programs.

The Republican party strategy appears to be to encourage private enterprise, entrepreneurs, working mothers, unions, and semipublic institutions, such as hospitals, to provide services. Such private child care centers would be required to meet the same high standards as prevail for public and private nonprofit programs.

Almost as if to answer the national need, a large-scale early childhood development franchise operation has appeared on the scene. The Dunbar Franchise Corporation, Fort Lauderdale, Florida, for example, calls for entrepreneurs "to profit handsomely by being among the first to meet this critical and expanding national need, with our team of internationally respected educators at your side."

The franchise calls for a $27,000 investment for a *turnkey* facility, which the franchisers say is valued at approximately $150,000. By a turnkey facility is meant one that is fully ready for operation when the

workers leave the site, with everything in it but the people. The franchise companies are saying they are prepared to offer a completely operational setup. There are at least three such companies now in operation nationally. All of them have outstanding, nationally recognized professional educators and scholars as consultants. They have designed the programs, and they are there to train the supervisors and personnel. This represents a real private enterprise approach to the last frontier of American public education, the teaching of preschool-age children. It seems to me that there is hard evidence that the trend is toward expanding educational services from private agencies. We are all familiar with the traditional services that have been purchased from the private sector.

Publishing houses supply textbooks. We buy instructional materials and movies from the private sector. In education, we have always bought housing and instructional facilities from the private sector. Food services and transportation are commonly bought from private firms.

The move now, though, is toward the purchase of something much more fundamental. It is toward the purchase of educational diagnosis and instruction itself. This is the new move I refer to when I say we are moving toward the private sector in the purchasing of services.

The Nixon Administration's desire to build accountability for learning into school systems is a matter nobody can fail to applaud. Also, nobody can deny that it looks like such a trend would suggest the development of a new behavior industry. The new industry would train teachers and paraprofessionals: train them to motivate, guide,

and measure learning. It would advise and monitor school systems. Perhaps there is no other way if we are really going to improve the schools.

A very good friend and colleague from whom I have learned a great deal, Dr. Godfrey D. Stevens, reminded me not long ago that we have never known a teacher to be charged by a pupil or a parent with malpractice. And only very rarely have we known a teacher to be charged with incompetence by fellow teachers or supervisors. Now, we speculate, perhaps that is because we really have no useful standards for judging the product when we accept delivery of the most important services of all--instructional services--from public or private sources.

CONCLUDING REMARKS

Melton C. Martinson*

I share the concerns that a number of you have indicated in terms of how change takes place within any organization or group. Now I have some rather specific reactions related to accountability and the necessity for it.

Ask yourself one rather specific question: Did I contribute to the problems we have just discussed or did I contribute to the solution? If we were to subject our own behavior during the last few days to the same kind of scrutiny or accountability that we are suggesting other people subject themselves to, what kind of data would we get? In other words, how many of us will exercise the luxury of leaving this meeting today and going back and complaining about it sometime in the future when, in fact, we had numerous opportunities over the past few days to initiate and participate in doing something about it.

If, in fact, I as an outsider were to judge our concern with the problems to which we are addressing ourselves by the degree of participation within this room as compared to that of the general congregation of the conference, I would see a very poor representation of our concern with those problems. If, in fact, I were going to collect data on the

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kind of participation from the concerned people in this room, I would have some rather definite concerns about the legitimacy of some of the things we have said. As I indicated to quite a number of you last night, I share the concern for the apathy and psychological detachment that is quite common in professional meetings of this kind.

I would like to make an analogy relating to the unfortunate occasion several years ago when Martin Luther King was assassinated. We happened to be participating in a meeting in Washington, D.C., at the time. When the meeting became rather disrupted, as you recall, you could observe some interesting behavior on the part of many of the professional people gathered in that room. We persisted in talking about learning and the management of behavior. I suspect that we were so much engrossed in talking about yesterday's research and theorizing in what might be the case tomorrow that *today* was right outside the door and we did not know what to do with it.

The reason this occurred to me is that the University of Oregon, as is the case at a number of other institutions, is not presently having classes.* The students and faculty are gathered together in open discussions to specify the issues and then to arrive at some resolutions, so that we can reenter the more formal educational process, one hopes, on a much more substantive basis. Many of my thoughts of past days were over on the campus; but here I was, sitting in this room listening

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* Classes were suspended after the killing of four students at Kent State University by National Guardsmen.

to people talking. I must admit to an active curiosity as to what was going on in the "outside world."

In terms of some of the remarks that have been made, I think that we come to meetings such as this far too concerned with having people provide *answers* for us. I would suggest that too frequently there are two naive groups of people in colleges and universities. The first group consists of those faculty members who think their mission in life is merely to provide answers for people. It seems their most critical concern should be, rather, to get people to ask questions in the first place, to engage in an orderly process to develop and decide between alternatives--i.e., to equip them to arrive at their own answers in a rational, problem-solving fashion. Too frequently, as consultants traveling across the country, we duplicate the first group's attitude under the guise of consultation. To get back to colleges and universities, I am convinced that the second group of naive people consists of those students who are willing to let the faculty get away with that kind of foolishness.

The question I would ask again, if you were collecting accountability data on this conference, is, What percentage of your time did you spend interacting professionally with resource personnel or other colleagues? Be honest. Mentally chart your involved behavior. What contributions have you made to this rational, problem-solving process?

Student participation is excellent. However, I see little point in having students operate as a separate group. The organization of this institute, in fact, is diametrically opposed to that. Your student representatives spent a year organizing this conference. The intent of

the short presentations, with each speaker given about twenty minutes, was to present varying views related to each area. More in-depth interchange was to be carried on in the afternoon discussion groups. The students planned for an integral involvement of all groups.

The critical "business of the day" was to be transacted in the discussion groups. I would wager that the participation of concerned people in those discussion groups would be about the same percentage as the congregation we have represented here this morning. Back to my basic query, Where were we when the war was going on?

My response to that question would take me back to my experience in Washington. We have an unfortunate tendency to spend too much time talking about yesterday's research and dreaming and theorizing about tomorrow, when in many cases we are ill equipped to do business today.

This conference, unfortunately, is not much different. We, in essence, did that very thing. We gather together at the end to talk about what might have been, when yesterday we did not enter actively into a process for which many of us are responsible.

In conclusion, I would welcome any suggestions you may have in terms of the development of a prototype model for a national consortium project. On that, I would say that we are in what I would call a "put up or shut up" position. We have every opportunity to interject our ideas and make any suggestion that we think is reasonable, that would have some positive impact on the characteristics or efficiency of our training programs. There is no distinction made between staff and students.

I would strongly encourage you to send in any of these suggestions. If you have some that you do not send in, and your suggestion does not

happen, it is your own fault; so do not complain to somebody next year because it did not happen.

I have appreciated the courtesy and contributions of the participants. I would like to recognize the contribution of the speakers and discussion leaders for providing the opportunity for a very productive interchange. We at the University of Oregon hope you will stop back. I will quote from Cervantes' *Don Quixote*, having to do with Don Quixote's man servant going off into the dusk to do "that which no man could do for him." Cervantes' literary imagery may be misleading, but we have the same problem in a sense. We each must go off into the night to do what no man can do for us, and what no consortium, in itself, can do for us either.

APPENDIX

The National Consortium of Universities Preparing Administrators of Special Education

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